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Dental Digest

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May 1951

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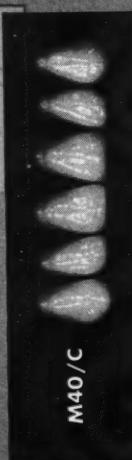
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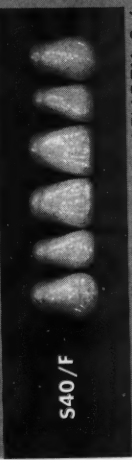
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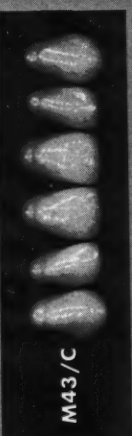
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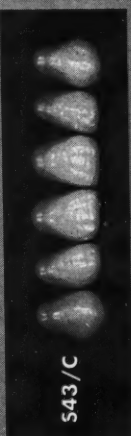
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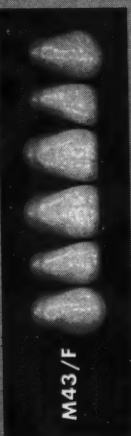
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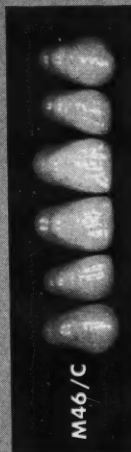
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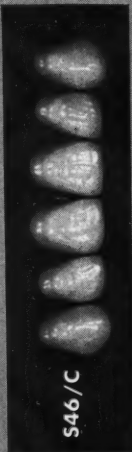
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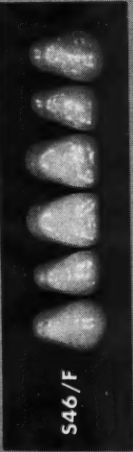
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Dental Digest

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About Our CONTRIBUTORS

PERRY R. SKINNER, D.D.S. (Philadelphia Dental College, 1899) reports in the current issue the results of his continued use of metal implants. Figures 1-10 which illustrate Doctor Skinner's article, INTRAOSSEOUS IMPLANT FOR STABILIZATION AND RETENTION OF DENTURES are from material contributed by Doctors Olivaria and Linari. Figures 11-13 are supplied by Doctor Skinner.

DON CHALMERS LYONS, D.D.S. (University of Michigan, College of Dentistry, 1921), M.S. (University of Minnesota, 1932), Ph.D. (Michigan State University, 1935) is a former Fellow of the Mayo Clinic and has a distinguished reputation for his innumerable publications on a wide variety of dental and health subjects. Doctor Lyons is represented in DIGEST this month by TUBERCULOSIS AS A COMPLICATION TO EXTRACTION OF TEETH.

ALVIN J. DE BRÉ, D.D.S. (Texas Dental College, 1945) emphasizes oral surgery in his practice. Doctor De Bré publishes in DENTAL DIGEST for the first time this month, presenting A CLINICAL REPORT OF 100 CASES USING BANTHINE AS AN ANTISIALOGOGUE IN DENTAL PROCEDURES.

M. HILLEL FELDMAN, D.D.S. (New York University, College of Dentistry, 1909) is director of dental service, Lincoln Hospital, Department of Hospitals, New York City. Doctor Feldman, who is well known to DIGEST readers, presents in this issue, SIMPLIFYING A DIFFICULT OPERATION FOR REMOVAL OF A MANDIBULAR THIRD MOLAR IMPACTION.

LESTER HOLLANDER, M.D. (University of Pittsburgh, 1912) has had a long and varied experience in clinical research and has published widely in this field. Collaborating with R. M. KENNEDY, D.D.S. (University of Pittsburgh, 1917) who is engaged in the practice of general dentistry, Doctor Hollander presents in the current issue, DERMATITIS CAUSED BY AUTOPOLYMERIZING ACRYLIC RESTORATION MATERIAL.

WILLIAM P. HUMPHREY, B.S., D.D.S. (University of Kansas City, School of Dentistry, 1943) is a pedodontist and is the author of several articles on the subject of dentistry for children. In the present issue Doctor Humphrey illustrates the steps in a simple and effective technique, A DIRECT METHOD OF MAKING AND SOLDERING A SPACE RETAINER.

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INTRAOSSEROUS IMPLANT

for Stabilization and Retention of Upper Dentures

PERRY R. SKINNER, D.D.S., Amsterdam, N. Y.

DIGEST

Great advances have been made in recent years in the construction of full dentures. In certain cases, however, the stabilization and retention of these dentures do not entirely meet the needs of the patient. Efforts to provide stabilization by means of alveolar implants of various kinds have been made over the years but for several reasons implants have not met the following requirements: (1) The implant must be tolerated by the alveolar bone and overlying soft tissue, (2) must not be exfoliated from the tissue, and (3) must provide needed retention with comfort for the patient.

The author of this article, and his South American confreres, have utilized the devices pre-

sented in a number of cases with extremely gratifying results. It is their hope that interest may be stimulated in the use of these or similar devices and that further exploration of the possibilities of the alveolar implant as a means of denture stabilization may be done.

The article is presented in two parts. In Part One the method developed by Olivaria and Linari¹ and the device they used is described. The method and device evolved by P. R. Skinner is described in Part Two. Inasmuch as the diagnostic and surgical procedures are essentially the same for both methods they are presented only in Part One.

A series of questions most commonly asked regarding the use of implants and answers is included.

Part One (Method of Olivaria and Linari)

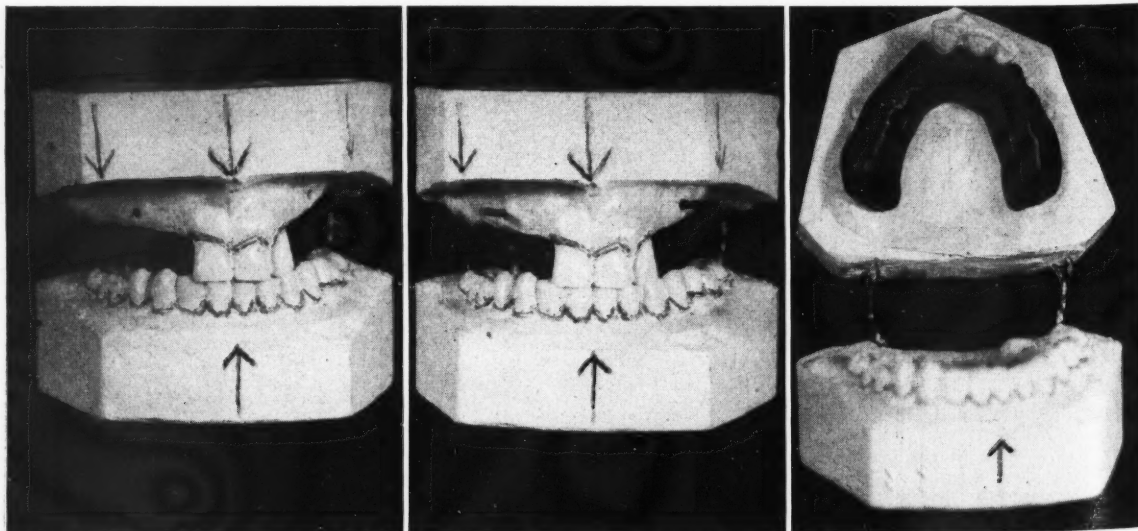
IN THIS technique a full comprehension of the details of the surgery employed is required for the operator to have the necessary confidence in proceeding with the operation and attaining the desired results. The following steps may be taken:

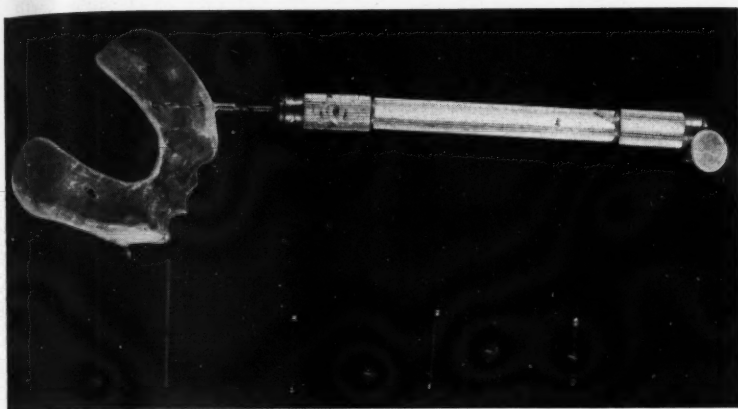
1. An impression is taken and a model obtained for studying the site to be selected for the alveolar trephining.

Author's note: I wish to express my appreciation to Doctor John Oppie McCall for assistance in organizing this material for publication.

¹Olivaria, R. S. E.; Linari, J. B.: Prosthesis a Placa con Retencion Quirurgica, Apartado de la Revista Odontologica de Buenos Aires, S. A. (Sept.) 1949.

1. Articulated casts of a case for intraosseous implants. Short pins placed to indicate points of entry for trephine.
2. Short pins, shown in Figure 1, replaced by longer pins.
3. Wax baseplate trimmed to desired outline.





4. Clear acrylic baseplate showing guide tubes.

2. Points for the entrance of the implants are indicated on the plaster model immediately distal to the canine eminence and as near as practicable to the mucobuccal fold (Fig. 1). The proposed path should range from the upper point downwards and lingually toward the distal, thus following an oblique path with the longest possible span.

3. A baseplate is made of pink wax extending over the alveolar area that will be covered by the appliance. The head of a pin cut off so that a millimeter of its stem remains is placed at each point selected for the entrance and exit of the channel. These will serve as radiopaque markers for the next step.

4. Occlusal and lateral (extraoral) roentgenograms are taken to determine the relation of the markers to the sinuses.

5. If it is found that the proposed path will not encroach on the sinuses, the plaster model is drilled in the place selected following the direction indicated in Figure 2 and using a drill the size of the outer diameter of the implant. The openings are countersunk to receive the head of the implant. The lingual half, the one with the largest bore, is then inserted (Fig. 12). (Although Figure 12 is not a part of the series illustrating this case it indicates clearly the technique of Step 5).

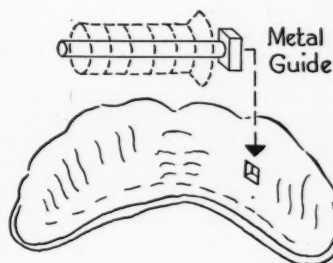
6. A transparent acrylic base is prepared which will cover the alveolar surface. Place in it long pins ex-

tending labially $\frac{1}{2}$ inch (Fig. 2). A wax baseplate (Fig. 3) is made covering the alveolar portion with pins extending $\frac{1}{2}$ inch labially to engage the tubes. When waxed in this position the long pins are removed and the case is processed in clear acrylic.

7. Precise surgical setting of the implants is completed.

Implant Technique—1. The parts are treated antiseptically and local anesthesia is obtained. The clear acrylic guide with the tubes (Fig. 11) is held in the proper position for the trephine (engine-operated channel cutter). From this point on operation is performed with the aid of the clear acrylic base with guide tubes (Fig. 4).

2. The trephine employed having exactly the same diameter as the guide tubes, the correct placing of the guide tubes ensures that the instrument will emerge lingually in the desired location on the palate.



5. Diagrammatic view of impression. Note the imprint of the square head pin in the impression. The implant (dotted lines) with pin is shown above the impression.

3. Hand-operated instruments are passed through the tubes to clear the way for the implant.

4. Exclude all mouth fluids. Remove the clear acrylic guide with its tubes and insert a sterile implant. The lingual larger half is placed first, the labial half is inserted into it, and the two halves are brought into proper relation by a special pair of pliers. Retention of the smaller within the larger half is by friction.

5. Allow the implant to remain four weeks before using it as retention for the slide denture. If the patient is wearing a denture, relieve all pressure on the implants.

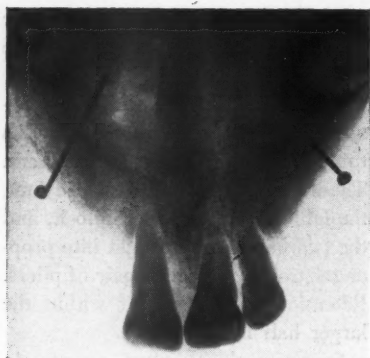


6. Occlusal view of the cast showing long pins in position.

Denture Construction—1. Secure an accurate model with an implant in, exactly duplicating the situation in the mouth. Because this is a precision attachment, accuracy is of prime importance.

2. A metal square with a wire stem is prepared and placed in the mouth implant (Fig. 5). The impression is taken with the square in place in the mouth. One of the flexible colloids is preferred.

3. Remove the impression from the mouth. Remove the square head stem and insert this with the model implant on the stem of the square



7. Occlusal roentgenogram showing intraosseous implants in place in the alveolar processes.

waxed in the impression. Pour in plaster of paris.

4. Upon separation the model is found to have an implant in the exact position in regard to location and direction as the implant in the mouth (Fig. 6). Also see Figure 7 which shows the roentgenographic appearance of implants in the jaw.

Similarity of Techniques

In all the steps described, including step number 7, the technique for implants in Part 2 is the same as that in Part 1, with the exception that Olivaria and Linari stabilize the implants with a metallic intermediary piece for denture stabilization (Fig. 8).

After completing these operations, the removable, double surgical and

prosthetic retention denture is made by the usual method, a special technique being devised for making the metal frame and that of the removable prosthesis (Figs. 8, 9, and 10).

Antecedents—No record has been found of the use of similar implants in Argentina. However, in the May, 1947 issue of *SPANISH ORAL HYGIENE* an article by Leon Lackner of Edinburgh regarding the implant technique was published. An article on the subject by Skinner and Robinson whose research has proceeded along similar lines was also published in

DENTAL DICEST in the August, 1946 issue.

Part Two (Method of Skinner)

Evolution of the Implant Technique

—1. Skinner and Robinson made their first experiments in 1938. A telescoped screw type implant was used as a unilateral support. Two cases are still functioning.

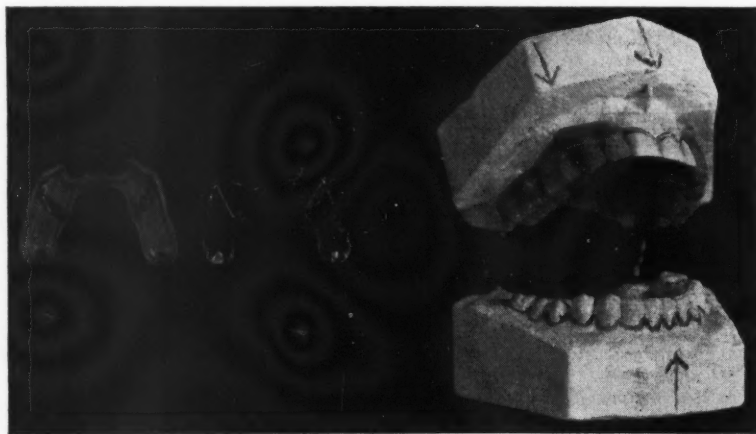
2. In 1944 a double implant was inserted for the full support of a roofless denture. This case is a success to date.



8. Occlusal view of the cast with metallic intermediary piece in place.



9. Palatal view of the denture with metallic intermediary piece incorporated. Note retention pins passing through the openings provided.



10. Completed denture on cast.

3. Two changes in the device have since been made: (1) Frictional retention of the two sleeves making up the implant proper was provided as the screw type tended to come partly unscrewed. (2) A connecting stabilizer between the wire loop attachments was provided so that the attachments will always be in a position to receive the locking round wire of the sliding mechanism (Fig. 12).

Use of the Wire Loop—The mechanics of the wire loop devised by Skinner is the following: An oblong loop is provided at the end of a wire

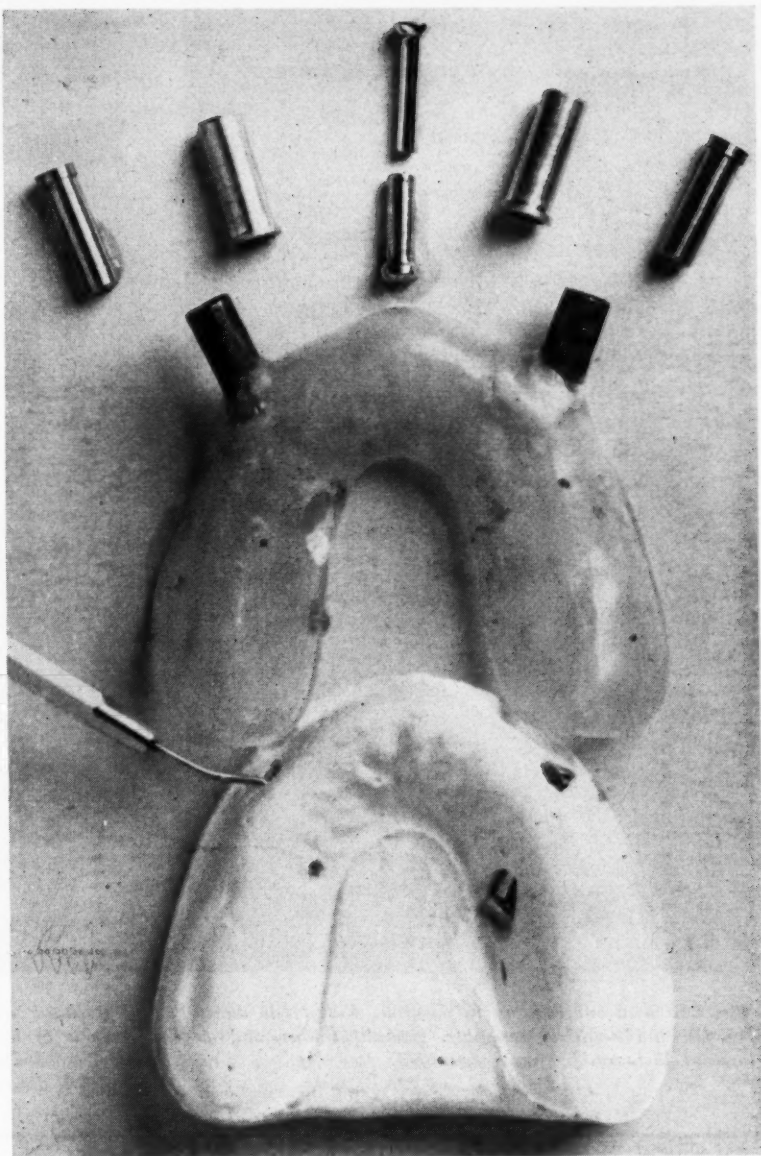
attachment. This wire fits precisely into the opening in the implant. The slightest bend in this wire keeps it in the implant. Note the downward and distal angulation of the implant toward the palate. This may not always be practicable depending on the x-ray results. However, this angulation distributes the force over a greater area.

Vertical Upward Movement Permitted—The provision of an oblong loop rather than a round loop, exposed on the buccal surface, makes possible a vertical upward movement of the round wire locking appliance that is processed in the buccal flange of the denture. The slight vertical movement permits upward movement of the denture under pressure on its yielding mucosal base without bringing corresponding strain on the implant. At the same time the implant with its oblong loop provides complete retention of the denture. It is often advantageous to adjust the loop as it then provides the correct angulation for the sliding wire.

Figure 12—The cast with one implant in place is shown. Above it is shown the assembly pins to be used in the implants. Above the stabilizer assembly are shown the wires with loops which provide for the reception of the locking mechanism. Two implants are also shown above.

Figure 13—A view is shown looking down on the finished denture with sliding locking attachments incorporated. Also shown are the locking attachments, bottom right not assembled, bottom left assembled. Above the attachments are the devices used to maintain them in position during the processing of the denture. The denture is placed in the mouth with the sliding wires retracted. When it is in place each wire is brought forward by the fingernail catching the flange so that the wire engages the loop at the orifice of the implant.

Processing the Slide Appliance to the Denture—1. An area is cut away in the flange portion of the denture to accommodate the device. The sliding wire attachment (Fig. 13) is placed in a locked position with the slide wire so situated in the loop de-



11. Cast with one implant in position and the clear acrylic baseplate in which guide tubes have been incorporated. At top center an implant disassembled is shown, on either side of which are separate guide tubes.

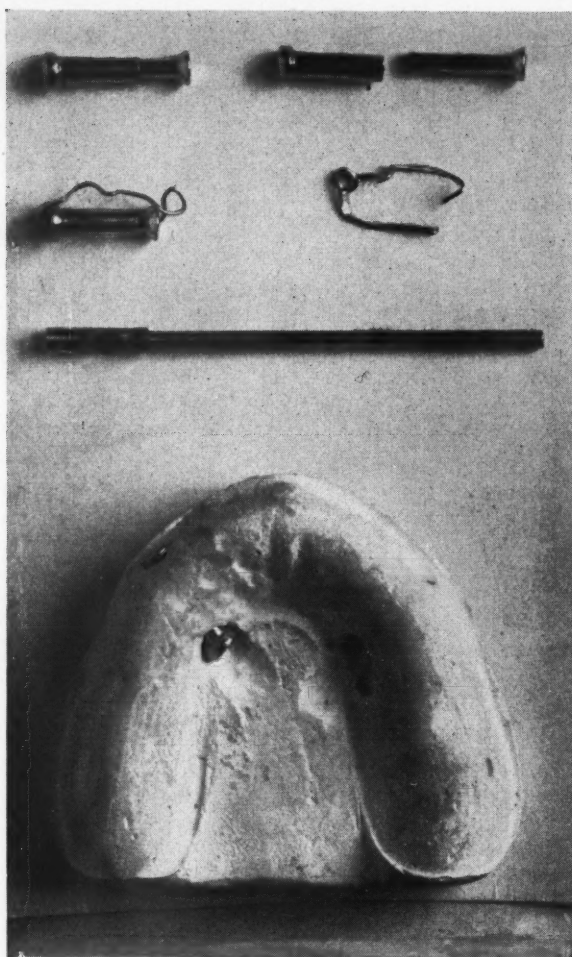
vice that occlusal movement is possible as noted previously.

2. When assembled with waxed-in flange complete, the case should be tried in the mouth. When found to function with ease the case is ready for processing.

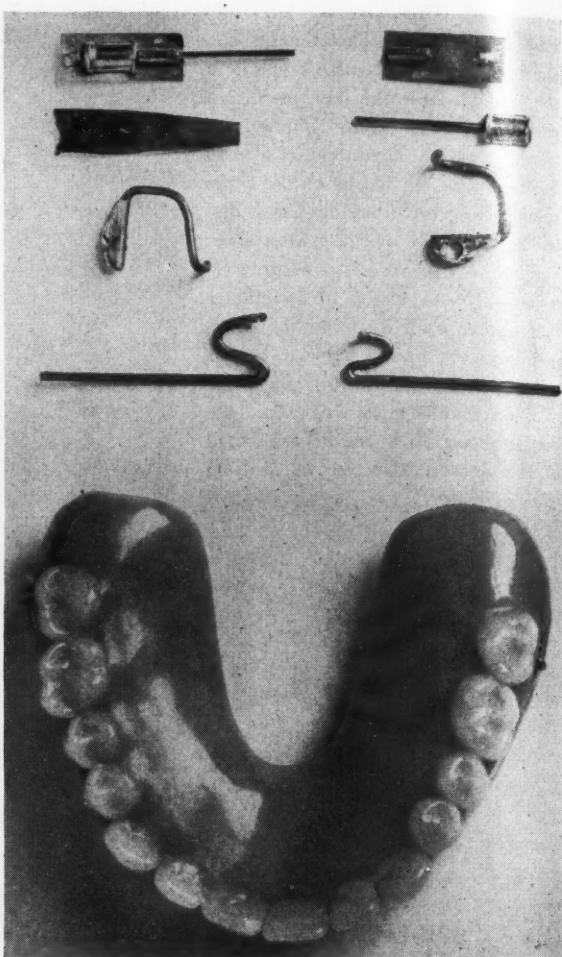
3. Remove the sliding wire from the tube and base by inserting the thin metal strip (Fig. 13) distally. The slide wire will pass over the stop.

4. Processing the slide appliance to the denture is then accomplished. The processing wire is inserted in the tube on the base. This extends outward to engage the investment (Fig. 13).

5. The processing relief arm for the loop attachment which is placed in the wax when the wire is removed extends outward to engage the investment. Waxed to the model, the



12. Cast with one implant in position. Above it is shown the pin and stabilizer assembly, retention loops, and an implant disassembled and assembled.



13. Occlusal view of completed denture. Note slight projections of locking mechanism on the molar flanges. Above are shown parts used during processing and the sliding lock disassembled and assembled.

case is now ready for processing.

Questions and Answers on Implants and Their Use

Question—Why is it necessary to have the implant exposed on the buccal and palatal mucosa with flanges?

Answer—Throughout the history of modern dentistry attempts have been made to place foreign objects in the jaw. Exfoliation resulted. The flanges on each end prevent exfoliation.

Question—Of what is the implant made?

Answer—The implant is made of steel alloy, vitallium. This material is absolutely tissue tolerant.

Question—When should the implant be used?

Answer—Only in those cases where retention cannot be obtained in any other way or where there must be positively no displacement of the denture as in the case of public speakers and musicians. For extremely nervous patients and possibly in mouths that have undergone extensive surgery, an attachment of this type may be indicated.

Question—What is the condition of the tissues after the implant has been in for a considerable length of time?

Answer—Epithelial tissue dips in on both ends of the implant making

the opening completely epithelialized through and through. The bone in the immediate circumference is destroyed. This does not affect the working of the implant as all that is required of the implant is to hold the denture in place at intervals of possible displacement during daily use.

Question—Can the implant be removed if necessary, for example, in the presence of some systemic condition?

Answer—The implant is easily removed by a special device designed for the purpose.

Question—Is the implant practical for partial dentures?

Answer—The implant used in a

unilateral case eliminates the necessity of clasping three or four teeth and as more teeth are lost the implant may be more and more appreciated.

Question—Is a full palate necessary in maxillary dentures with implants?

Answer—No. A horseshoe design will suffice as the function of the full palate is turned over to the implant.

Question—Is the force of occlusion placed on the implant?

Answer—Absolutely not. Any pressure of the denture on closing is taken up by the tissues and the tissues alone. The attachment loop is designed to permit some vertical upward movement of the denture without strain or pressure on the implant.

Question—Can the patient easily remove the denture to clean it?

Answer—The sliding wire attachment is freely moved by the patient's finger releasing the positive locking of the denture to the maxilla.

Conclusions

The authors do not advise the use of any one system of prosthesis. The clinical study of the prosthesis must determine the choice of the system to be employed in a given case.

Success in the case submitted does not guarantee success in general, nor warrant setting up a precise system. The cases reported, considered in conjunction with those reported in other countries, are intended to serve as a precedent and guide for further studies. On this basis the following comments are made:

1. A prosthesis of the kind described can be advantageously used on patients who, because of psychophysical factors (1) cannot tolerate dentures with large palates, (2) regard the dentures with apprehension, and (3) have difficulty in their retention.

2. This type of prosthesis is indicated in (1) young edentulous persons; (2) public speakers (because

of absolute safety in retention and absence of palate); (3) in musicians playing wind instruments; and (4) singers.

3. Because of esthetic factors and absence of clasps, in the case of partial dentures, the implant denture is suitable for women.

4. The results obtained justify continuing the study of the implant problem in order to find a solution to cases in which the usual maxillary retention cannot be used (advanced atrophy of the alveolar process and cases for the lower jaw where the difficulties are considerably greater whatever system be employed).

5. Intraosseous implant stabilization can be accomplished in many different ways. The technique presented may or may not be the method which will give the best results. As with all denture procedure, experience and good judgment are the greatest assets.

32 East Main Street.

Fluorescence Phenomenon of the Tongue

Summary and Conclusions

THE DORSUM of the tongue often shows under Wood's light an orange-red fluorescence. This is probably due to synthesis of porphyrin by microorganisms.

The tongue has been examined in over 400 persons. Fluorescence has been found in the majority of healthy individuals.

Absence of fluorescence becomes

more frequent with increasing age; it was found in only 11 per cent of children but in 53 per cent of people over 80.

In certain diseases—pernicious anemia, hypochromic anemia, sprue syndrome, and vitamin-B deficiencies—there is a higher incidence of absent fluorescence.

The vitamin-B group and iron have some influence in the restora-

tion of fluorescence. Antibiotics destroy fluorescence by their action on microflora.

The clinical significance of this phenomenon is not yet known. Its possible connection with nutritional factors has been discussed.

From *British Medical Journal* No. 4698:120 (Jan.) 1951.

Dental Meeting Dates

Nevada State Dental Association, annual meeting, Reno, June 1-2.

The Connecticut Dental Commission, regular meeting, Hartford, June 19-23. For information write to Doctor Clarence G. Brooks, New London, Connecticut.

American Academy of Dental Medicine, fifth annual meeting, Hotel Dennis, Atlantic City, New Jersey, June 22-24.

Pacific Coast Dental Conference, an-

nual meeting, Seattle, June 25-28.

Maine State Dental Association, annual meeting, Rockland, June 28-30.

West Virginia State Dental Association, annual meeting, White Sulphur Springs, July 16-18.

American Dental Society of Europe, Lausanne, Switzerland, August 1-4.

Pennsylvania State Dental Association, annual meeting, Pittsburgh, September 11-14.

New England Dental Society, annual meeting, Boston, September 26-27.

Colorado State Dental Association, annual meeting, Colorado Springs, October 1-4.

American Public Health Association, annual meeting, San Francisco, October 29-November 2.

Ohio State Dental Association, annual meeting, Cleveland, November 25-28.

ACUTE TUBERCULOSIS

as a Complication to Extraction of Teeth

DON CHALMERS LYONS, D.D.S., Ph.D., Jackson, Michigan

DIGEST

This case illustrates the value of a complete case history and a thorough physical check-up when oral conditions suggest it, even in what is presumed to be a routine extraction of teeth.

In this case report an active case of tuberculosis, previously undiagnosed, constituted an unnecessary hazard in the administration of a general anesthesia which was avoided by consultation.

Case Report

Complaint and History of Present Illness—1. The patient, a white woman aged 26, was referred by her physician for the removal of three teeth under nitrous oxide-oxygen anesthesia.

2. Because of severe pain in two of the teeth to be extracted, the patient had requested the physician to administer a sedative the previous even-

ing. The teeth, and another molar tooth, were extensively carious.

3. All of the maxillary teeth had been removed over a period of several years.

Oral Examination—1. An extensive generalized inflammation of the gingival tissue which was a diffuse dull red in color, and somewhat brighter inflammatory red at the gingival crests, was shown by examination of the mouth. Although the soft tissue did not seem to be puffy, it bled profusely when touched with a probe.

2. The teeth were clean and there was no demonstrable calculus accumulation to account for the gingivitis. Probing with a blunt explorer demonstrated (1) that the periodontal gingival margins had only Class 1 pockets (extremely shallow) and (2) that there was very little subgingival calculus.

1. X-rays showing buried roots (4) and carious infected teeth in the mouth of a patient with active tuberculosis.

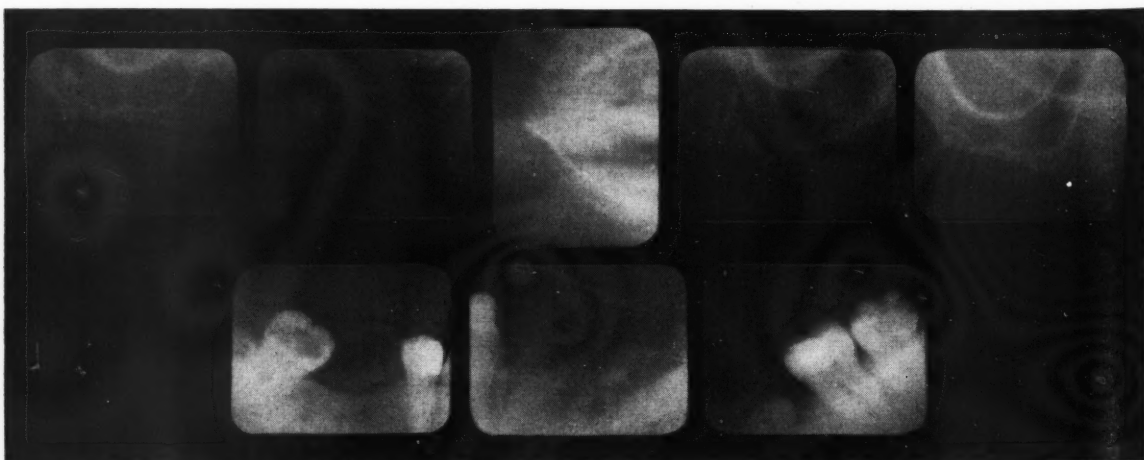
3. The maxillary jaw was edentulous, but the denture which the patient was wearing was loose and unstable and had produced a diffuse redness over the entire palate. The patient stated that she had found it difficult to wear the denture because of the irritation.

4. It was noted that there was considerable etching of the teeth at the gingival margins which had produced a shallow cupping of the tooth enamel, dull white in color without the staining of a chronic process. This indicated that the carious process was active and acute. An x-ray of the teeth to be extracted and of the maxillary areas was advised.

X-ray Examination—1. Dental x-rays revealed four retained root fragments in the maxillary alveolar bone and another in the right mandibular bicuspid area. This root seemed to connect with a fistula draining mesial to the first molar.

2. No alveolar destruction was noted about the roots of the acutely painful teeth.

3. There was no swelling of the tissue over the mandible or surround-



ing alveolar mucosa of the painful teeth.

Dental Diagnosis

1. The presence of an undiagnosed underlying physical condition was indicated by (1) the diffuse dull redness of the gingival tissue with profuse bleeding on palpation, and (2) the presence of active etching on the teeth.

2. The condition of the tissue and bone around the painful teeth indicated that the odontalgia was due to the extensive caries and pulp exposure with degeneration of the pulpal tissue.

3. The oral picture described is usually indicative of (1) a blood dyscrasia, (2) a severe toxemia, or (3) possibly an active tuberculosis. The acute dull white etching at the gingival margin has been previously noted in cases of active tuberculosis.

It was therefore suggested that a further physical examination be made before the administration of a general anesthesia to remove the teeth.

Physical Examination

1. On objective examination the patient appeared underweight; otherwise she seemed to be in fair health.

2. She had no physical complaint other than fatigue.

3. Her weight was 109 pounds. She stated that she had lost 6 pounds in the past two months. She believed this was because her sore teeth made it impossible to eat properly.

4. She had recently quit work because of constant fatigue.

5. The chest was somewhat dull to percussion.

6. Heart and blood pressure were normal.

7. Bleeding time was 2 minutes.

8. Hemoglobin and general blood count were normal with white count slightly higher than average: 9000.

History of Former Treatment—1. It was learned that five years previously the patient had complained of debility and loss of weight and that she had been given tests for tuberculosis.

2. Her physician stated (1) that the records showed that an x-ray taken at that time revealed a slight scarring at the apex of the right lung, and (2) that a twenty-four-hour pooled sputum sample had been negative.

3. The patient had been given liver extract, multiple vitamins, and the caloric intake of her diet had been increased. She had responded to treatment without further complaint to the present time. Permission was obtained for new tests.

Results of New Tests—1. The laboratory tests showed a constant subnormal temperature, the highest in forty-eight hours being 98.2 degrees.

2. X-rays of the right lung showed infiltrations in the entire apex. Compared with x-rays taken five years before, considerable extension and deepening of the infiltrations were noted.

3. X-rays of the left lobe showed infiltrations in the apex and first interspace.

4. Considerable increase in exudative elements was noted.

5. Pooled twenty-four-hour sputum test was again negative.

6. Tuberculin skin test was positive.

7. Impression of hospital laboratory: active clinical tuberculosis.

Treatment

1. After premedication with 3 grains of seconal sodium and 500,000 units of penicillin, the patient was sent to surgery.

2. The mandibular molars and mandibular residual root were removed under block procaine anesthesia.

3. The administration of penicillin was continued in the same amounts every twenty-four hours.

4. Three days later the maxillary roots were removed by the same operative procedure.

5. A normal dental recovery was made by the patient who was then referred to a tuberculosis hospital for treatment. At this date, ten months later, her progress toward arrest of the disease is adequate.

Conclusions

1. This case demonstrates the necessity of a close check on the general physical condition in routine dental extraction cases.

2. The fact that the mouth or part of the mouth is edentulous should not be interpreted as indicating that there are no possible infective factors in the areas. In this instance the residual buried roots in addition to the painful carious teeth added to the infection present and probably stimulated the development of the tuberculosis.

3. There are many oral signs of general physical disease which should suggest to the operating dental surgeon and the examining physician further consultation before treatment.

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A CLINICAL REPORT of 100 Cases Using Banthine® as an Antisialagogue in Dental Procedures

ALVIN J. DE BRÉ, D.D.S., Shreveport, La.

DIGEST

The properties of a new drug, Banthine®, as applied as an antisialagogue in dentistry, are studied in this report which is based on observation of 100 cases in which the drug was successfully used.

Definition

A new drug, Banthine® (Beta-diethylaminoethyl xanthene-9-carboxylate methobromide), which is a single synthetic chemical substance known by the generic name of methantheline bromide, has recently been introduced into the medical armamentarium.

Hambourger et al,¹ and Longino et al² have studied the actions of the new drug and find that in therapeutic doses it has (1) an atropine-like action, and (2) an autonomic ganglion-blocking action. Laboratory observations indicate that in very large doses the drug has a curare-like effect.

Evaluation

1. Clinical evaluation has been largely limited to the field of peptic ulcer^{3, 4} in which unusual value has been demonstrated. Investigational

data as to the use of Banthine in the dental field have been limited.⁵

2. Careful pharmacologic studies as demonstrated by Hambourger, et al⁶ and clinical studies as demonstrated by Longino give a wide range of safety between therapeutic and toxic dosage.

3. In the treatment of peptic ulcers, patients were treated with doses of 50 to 100 milligrams every six hours for four weeks to six months. The side effects noted were those expected from its physiologic effects, (1) dryness of the mouth, (2) dilation of the pupils, (3) constipation and occasional urinary retention. The latter two usually come on with the repeated use of large doses of the drug.

4. Hambourger studied the effect of Banthine on the secretory response to electric stimulation of the chorda tympani nerve in each of two anesthetized dogs with cannulated Wharton's duct. The secretion was completely abolished by intravenous injection of 0.1 milligram of Banthine chloride.

Dental Application

Inasmuch as many dental techniques must be performed under absolute dryness and many patients object to the use of the saliva ejector, an attempt was made to utilize the drying side effect in Banthine. The first forty-six patients treated with Ban-

thine demonstrated the beneficial effects of the drug to the dentist:

1. Dryness of the mouth occurred from four to fifteen minutes after 50 milligrams of the drug were ingested and lasted from one to three hours. A saliva ejector, although used, was not necessary and the dental treatment was carried on without the handicap of saliva dampening the field of operation.

2. No side reactions whatsoever were observed from the dose used. In some cases 25 milligrams were almost as effective as the larger dose.

3. In large therapeutic doses some patients report a mild blurring of vision which tends to diminish or disappear as therapy is continued.

4. Patients with prostatic hypertrophy may report some difficulty in urination as Banthine acts to relax the hypertrophied bladder musculature.

5. The side effects cited would not concern the dentist as a single administration would not induce the effects described.

Results in Dental Applications—1. Of the 100 cases discussed herein there were only four failures. All four of these were profuse salivators and the 50-milligram dose only slightly diminished the salivation.

2. Upon administration of 100 milligrams the desired effect was obtained.

3. It is advised that in any case where the 50-milligram tablet does not reduce salivation satisfactorily an additional 50 milligrams should be given approximately fifteen minutes after the first application.

Indications in Dentistry—1. The use of Banthine is indicated in den-

¹Hambourger, W. E.; Cook, Donald L.; Winbury, Martin M.; and Freese, Homer B.: Pharmacology of B-diethylaminoethyl xanthene-9-carboxylate methobromide (Banthine) and Chloride, J. Pharmacology & Exper. Therap. In press.

²Longino, F. H.; Grimson, K. S.; Chittum, J. R.; and Metcalf, M.D.: An Orally Effective Quaternary Amine, Banthine, Capable of Reducing Gastric Motility and Secretions, Gastroenterology 14:301 (Feb.) 1950.

³Grimson, K. S.; Lyons, C. K.; and Reeves, R. J.: Clinical Trial of Banthine in 100 Patients with Peptic Ulcer, J.A.M.A. 143:873 (July 8) 1950.

⁴Holoubek, Joe E.; Holoubek, Alice Baker; and Langford, Richard B.: Treatment of Duodenal Ulcers with Banthine (A Study of Forty Cases). To be published.

⁵Holoubek, Joe E., and De Bré, Alvin J.: The Use of Banthine as an Antisialagogue in Dental Procedures (A Report of 46 Cases). To be published.

⁶Hambourger, W. E.; Cook, D. L.; and Green, D. M.: Antagonism of Cholinergic Triad by B-Diethylaminoethyl Xanthene-9-Carboxylate Methobromide (Banthine Bromide), Federation Proc. 9:281 (March) 1950.

istry whenever excessive salivation exists causing the field of operation to be moist. (1) Third molar impactions, and (2) placement of plastic restorations and amalgam restorations are greatly aided by the use of 25 to 100 milligrams of the drug prior to starting the procedure.

2. Orthodontists will find the administration of Banthine prior to cementing bands and appliances extremely helpful.

3. The drug is also indicated in

some instances of hypersalivation occurring in the first few days after complete dentures are inserted. In these cases 50 milligrams every six hours for three to four days are recommended.

4. The patient should be warned that occasionally urinary retention or constipation may develop. A mild laxative is recommended for the constipation. If difficulty in urination develops the drug should be stopped.

Summary

1. In the 100 cases described no side reactions whatsoever were noted.

2. Banthine has been found to be an effective antisialogogue to be used prior to a dental procedure.

3. Unlike atropine and other drugs with this action no true contraindications to the administration of Banthine have been reported where dental procedures are concerned.

803 Jordon Street.

The Problem of Dental Care In Cerebral Palsy

ROBERT V. MARTIN, M.D., Brooklyn, N.Y., and STANLEY R. SPIRO, D.D.S., New Hyde Park, N.Y.

The Problem

The following are features that compose the problem to the dentist in treating the cerebral palsied patient: (1) He must be able to operate in a mouth free from interfering tongue motions, (2) be prepared for sudden closing of the jaws, (3) excessive salivation, (4) and operate in a mouth free from the interference caused by involuntary motions of the facial muscles (athetosis).

Dental Hygiene—The problem to the parent is mainly that of dental hygiene. Many of the palsied do not know when their jaws may close involuntarily (athetosis). A sudden loud noise could produce the same thing (spasticity). For the same reasons, the care of these children's teeth is extremely difficult. They cannot be cleaned properly.

Speech Handicaps—(1) Many of the children cannot speak; consequently it is difficult to tell when the child has a toothache and its location. (2) Some children have not had

sufficient experience to stabilize emotional responses and as a result frequently overreact to situations. (3) Psychic trauma which may result in abnormalities of emotional and personality development should be avoided. (4) The practice of evasive lies and promises of rewards for good behavior is to be condemned as it breaks down the patient's confidence in the doctor and parents.

Treatment

Like medical treatment, dental treatment must be directed with a basic knowledge of the five types of cerebral palsy (Spasticity, Ataxia, Athetosis, Tremor, and Rigidity).

The dentist must know whether he is dealing with spasticity or involuntary motion. Upon this alone may rest the decision to attempt dental care under a general anesthetic, or not.

The type of cerebral palsy will also have a bearing on the kind of premedication used; especially in the

postencephalitic athetoids, it is wise to avoid too much depressant effect upon cells already suffering from a deficiency of oxygen.

The handicaps of uncomplicated ataxic and tremor types should not present dental problems. The problems, therefore, rest mainly with the spastics, athetoids, and rigidities.

Advances in Technique

The advancement in dentistry and medicine has been correlated with progress in anesthesiology. The main concern is for the child who is not adaptable to usual care because of his motor disability.

The problem in successfully managing this type of patient is to utilize a technique of general anesthesia and procedure which will permit the doctor to operate carefully and successfully in the mouth.

Adapted from *Medical Times* 79:214-215 (April) 1951.

Simplifying a Difficult Operation for Removal of a MANDIBULAR THIRD MOLAR IMPACTION

M. HILLEL FELDMAN, D.D.S., New York

DIGEST

The surgery of a horizontally impacted mandibular third molar may be facilitated by the procedure outlined in the following technique. The roentgenograms show the preoperative and post-operative views of such a tooth and the accompanying schematic drawings describe the author's technique.

3. Drilling is done into the cemento-enamel aspect of the impacted tooth to aid in sectioning the crown from the body of the root (Fig. 3, B). Removal of crown portion (Fig. 4).

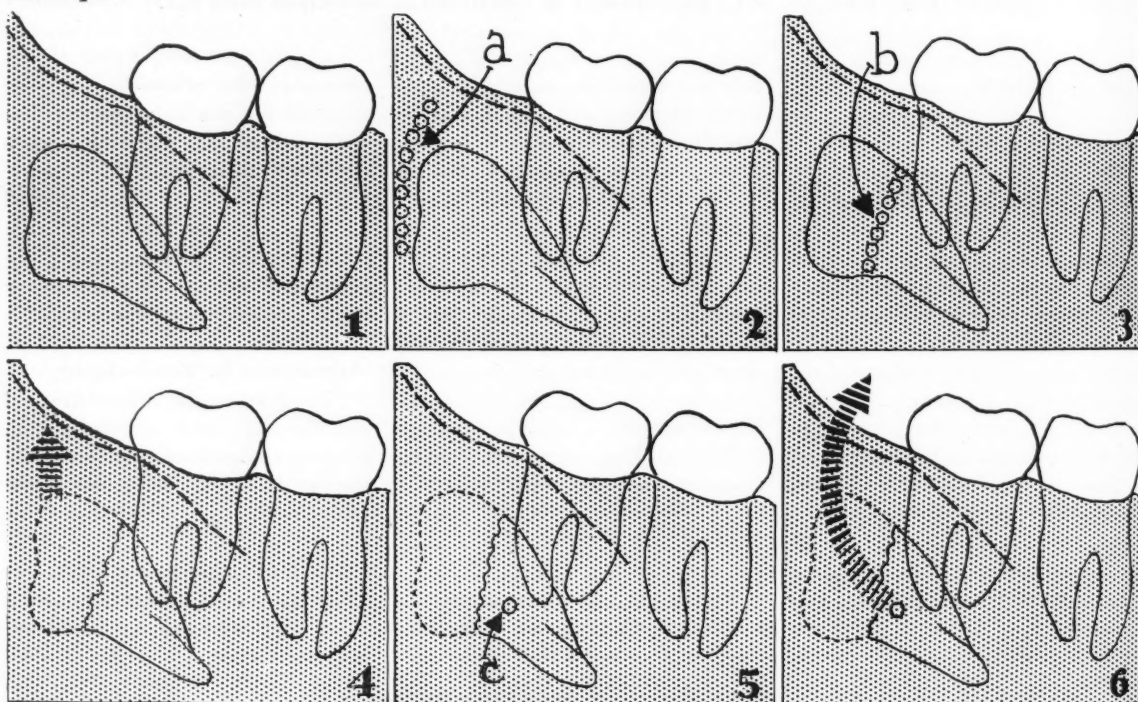
4. Drilling into the root to afford reception of the lever for elevation of the root into the space vacated by the crown (Fig. 5, C). Removal of root portion (Fig. 6).

Advantages

The advantages of an operation performed in this manner with drill and lever are the following:

- (1) Minimum of trauma to the mandible.
- (2) Maximum of post-surgical comfort to the patient.
- (3) Reduced possibility of injury to adjacent teeth.

730 Fifth Avenue.

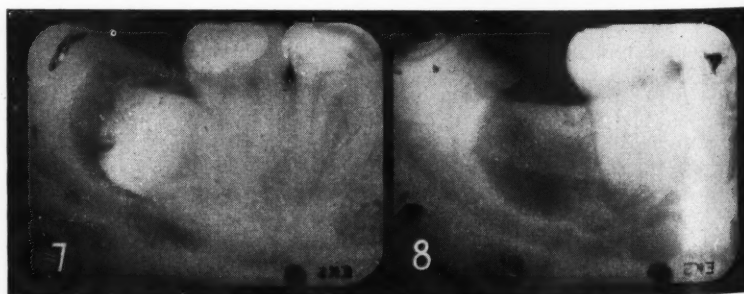


Technique

The following steps should be taken:

1. Adequate flap reflection is performed indicated by the dotted line along the ridge on the buccal aspect. A second incision is made extending downward and forward across part of the second molar (Fig. 1).

2. Drilled openings are prepared in the outer alveolar wall to aid in the bone removal for thorough exposure of the impacted molar crown (Fig. 2, A).



7. Preoperative

8. Postoperative

DERMATITIS *Caused by Autopolymerizing*

Acrylic Restoration Material

LESTER HOLLANDER, M.D., Pittsburgh
and R. M. KENNEDY, D.D.S., Butler, Pa.

DIGEST

A persistent acute dermatitis in a general dental practitioner from the use of a plastic restoration material is described in this case history. The possibility of the occurrence of a stomatitis from a similar cause emphasizes the importance of close observation of both dentist and patient in the application of cavity restoration agents.

Case History

A 58-year old general dental practitioner presented with a scaly dermatitis which affected the palmar and the lateral surfaces of the thumb, the index, the middle and the ring finger of the left hand. Throughout and about the periphery of the affected areas minute pinpoint-sized vesicles (blisters) were present.

Symptoms—Itching, burning, and a slight amount of tenderness were the subjective symptoms. The duration was about six months. During this time the dermatitis was more or less continuous and persistent, with periodic exacerbations and recessions of unaccountable nature.

Temporary Disappearance of Symptoms—During a period of two weeks, when the patient was out of his office, the dermatitis disappeared completely, only to reappear a few days after his return to his routine practice.

Thus the history pointed directly

to an irritant accosted in the performance of the patient's duties as a general dental practitioner.

Patch Tests—Inasmuch as the fingers affected were those used in the manner of a buccal retractor and most often sensitized by one of the "_____caine" anesthetic preparations, it was decided to patch test the patient with the two of the commonly used preparations and at his own insistence also with a self-curing restoration plastic of which he himself was particularly, and later proved, justifiably, suspicious.

Results of Tests Conclusive—While the patch tests with procaine and novocaine were totally negative, the patch test with the self-curing restoration plastic was strongly positive. In fact, an edematous acute dermatitis was present at the site of the contact area at the end of a 48-hour test period. (Two weeks later the patch test was still strongly positive.)

Treatment

The patient was instructed (1) to use astarte brand protective paste to allay the existing dermatitis of the fingers, and (2) to refrain from the use of self-curing plastic and similar acrylics for restorations. If the need for the handling of such substances was unavoidable, he was instructed to protect his hands with suitable gloves.

Discussion

The list of contactants as etiologic agents of dermatitis is constantly on the increase. Each newly synthesized

compound adds its own particular hazard. In the field of general dental practice this is of considerable significance to practitioner and patient alike, as cutaneous and mucous membrane sensitivity is the expression of the identical mechanism of allergy.

Hazard to Patient—For each substance which causes a form of eczema or dermatitis of the hand of the dentist there must be many instances of stomatitis caused in the mouths of patients by the same substance.

Origins Unsuspected—Often, of course, the source of the stomatitis is unsuspected and therefore unrecognized until the continued presence of a sensitizing substance, such as denture material, provokes a singularly painful and unabating form of stomatitis and virtually forces recognition of the etiologic agent.

Vigilance of Great Value—In the presently reported instance the vigilance of the patient proved of the greatest importance. Without it, the true cause of the dermatitis would not have been found.

Conclusion

In conclusion the following points should be emphasized:

1. Autopolymerizing acrylic restoration materials can and do cause contact sensitizations and subsequent persistent inflammatory reactions such as dermatitis.

2. It is important to disseminate this information, not only as a warning of an additional professional hazard of the general dental practitioner, but also of the likelihood that such substances may be the etiologic agents in the development of a stomatitis.

630 Jenkins Building.
506 West Cunningham Street.

A Direct Method

for Making and Soldering a SPACE RETAINER

WILLIAM P. HUMPHREY, D.D.S., Denver

DIGEST

No spot welder is needed in carrying out the simple technique described in this article. The procedure, which is given in detail, is one that the author has evolved and applied successfully in his own practice.

The author uses an electric spot welder because he makes a great many retainers; if an operator makes as many as five retainers a week, some type of spot welder is a good investment. The simple technique described here is for the general practitioner who makes only a few retainers a year.

Technique

1. Make the nerve block for the tooth that is to be extracted.
2. Adapt a band or crown next to the tooth to be removed.
3. With a sharp instrument, scribe mark on the mesial buccal part of the crown where the retaining loop is to be soldered (Fig. 1).
4. Select the proper size space loop by use of a millimeter gauge, or make a loop. The author prefers a loop 1 to 2 millimeters larger than the space so that the loop can be contoured to the opposing tooth.
5. Place flux on open end of the wire loop and solder in a gas or air flame (Fig. 2).

6. Remove crown or band and flux the part where the mark has been scribed. Flow solder in this area (Fig. 3).

7. Using the alligator wire holding device, place the two soldered parts together. Flux again and solder over flame (Fig. 4).

8. Adapt loop, using a 53-gauge arrow plier to opposing tooth.

9. Place in 20 to 40 per cent nitric acid and bring just to a boil to remove oxidation.

10. Wash, and polish, using a Joe Dandy disc and a burlew wheel.

11. Remove the tooth.

12. Cement in position.

No spot welder is needed for this technique.

390 University Boulevard.

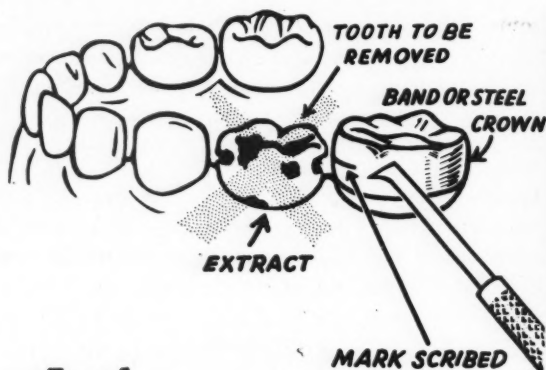


FIG. 1

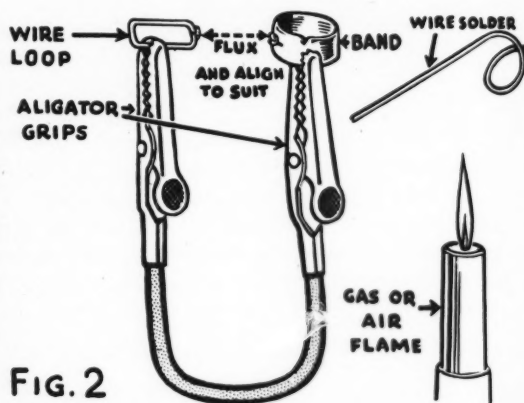


FIG. 2

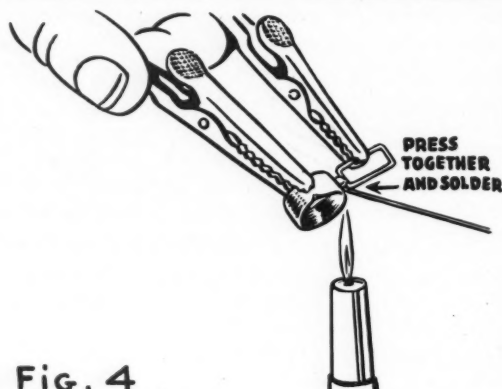


FIG. 4

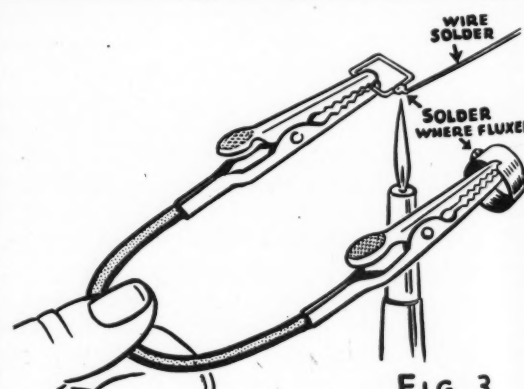


FIG. 3

The EDITOR'S Page

A DARK *terra incognita* lies between the practice of medicine and the practice of dentistry. When a person is stricken with an infection of a possible dental origin, when the mouth tissues express the signs of systemic disease, when painful conditions prevail about the head and face, the sufferer may enter the abyss that separates medicine and dentistry. The physician usually knows nothing of dentistry and cares less. The dentist is so preoccupied with his mechanical procedures that he neglects his diagnostic responsibilities. Both are to be blamed; the ignorance and indifference they share in common.

One bright hope for a better understanding and working relationship between medicine and dentistry is held in the various intense seminars that are being given on dental medicine. At these seminars dentists who are willing to assume their responsibilities in treating *whole* patients receive instruction in the basic and the clinical medical sciences. The physicians who give part of the programs in these seminars are developing a different point of view and attitude toward the dentist and dentistry which they in turn will pass on to their medical colleagues. From this favorable interchange the public will profit.

Speaking before the University of Pennsylvania Seminar on Oral Medicine, Howard Reid Craig, M.D. made this forthright and penetrating statement on the relationship that should exist between oral and general medicine:¹ "Of all the apertures of the body, the mouth is probably the most subject to trauma, infection and general insult. Possibly it is also guilty of committing the most sins. Further, it is, more than any of the others, the site of lesions or signs of disease elsewhere in the body. It is rather surprising that physicians in their search for aperture specialization, have to a great degree overlooked the mouth. Perhaps it is because many have thought of the mouth merely as a throughway to the tonsil and points south rather than as a full station stop with major disease potentialities . . .

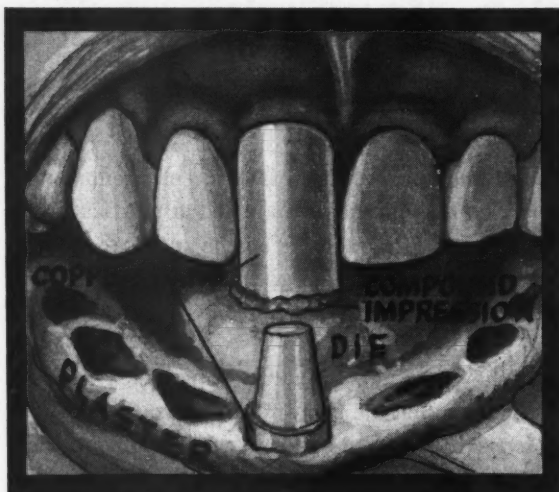
"The rise of oral medicine as a distinct field of

interest and specialization is a recent phenomenon for which the public is indebted almost entirely to the dental profession. For the medical profession on the whole has given it relatively little specific thought. It has been one of those things merely included . . .

"It should be only a natural and much desired phenomenon that the two professions, medicine and dentistry, both health services, with common aims, common techniques, and interested in a common organism should approximate their fields of work in such a way that the medically trained men should think more in terms in keeping with the importance of the oral cavity as a seat of disease and the dentally trained individual should envisage the whole body while he focuses his immediate attention on diseases of the mouth.

"But let us not delude ourselves with the idea that that happy day of communal feeling is here. True, in isolated places, in some university centers, in some public health departments, there has been built up, by intimate contact, mutual respect and cooperation to the educational benefit of both professions and to the physical benefit of the patient. We should be realistic enough to face the fact that for the average professional man on the street, the gap between the two professions is only beginning to be narrowed. The average medical man feels that the dentist should stick to his last of prosthetics and restorations, forgetting meanwhile that some of the earliest manifestations of disease, the burden of which he will later have to carry, may be discovered in the dental chair. On the other hand, the dentist is too apt to feel that general medicine is the physicians' domain, not his, or he hesitates to bespeak his knowledge of oral diagnosis when his gratuitous contribution to physical diagnosis may be unwelcome. In the language of the street, he doesn't want to 'stick his neck out.' These attitudes and relationships may not be characteristic of the higher academic echelons, but the cordiality and cooperation implied in joint professional meetings and in periodical literature is only too often belied in actual practice."

¹*Annals of Dentistry* 8:112-114 (Dec.) 1949.



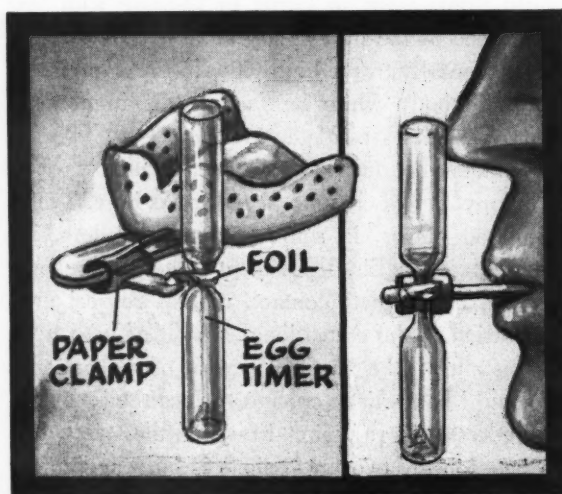
1

Clinical and Laboratory

Accurate Seating of a Metal Die

Manuel E. Ribner, D.D.S., Brooklyn, N.Y.

1. Take two copper band impressions of the tooth preparation for a jacket crown. Place one tube impression on the preparation before the plaster impression is taken. The band will be embedded in the plaster and will afford an accurate seat for the metal die.

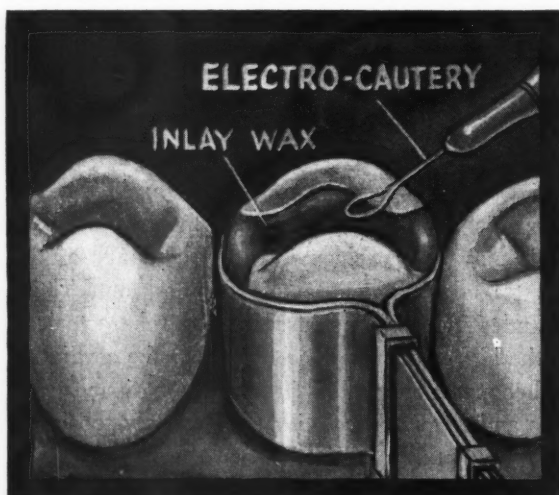


2

A Timer for Alginate Impressions

S. M. Dooreck, D.D.S., Brooklyn, N.Y.

2. Most alginate impressions require three minutes to set before removal from the mouth. A three-minute egg timer is fastened to the handle of the tray with a paper clip.



3

Softening Inlay Wax

Walter P. Raven, D.D.S., Pottstown, Pa.

3. After inlay wax is inserted in the cavity for a direct pattern it may be resoftened in the cavity by using an electro-cautery.

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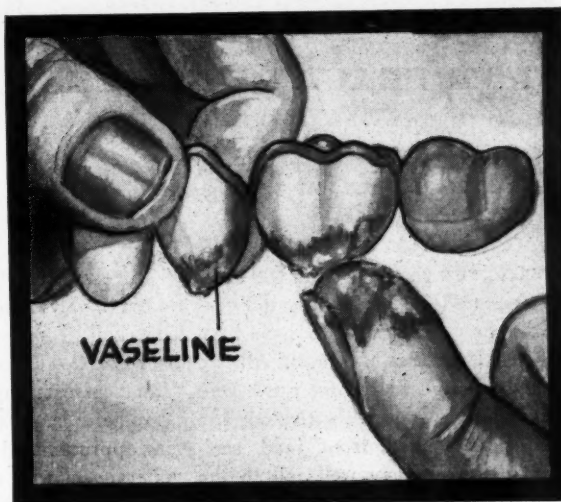
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Cementing a Fixed Bridge

S. Traunstein, D.D.S., Brooklyn, N.Y.

4. To prevent excess cement from adhering to the pontics where they contact the ridge, carefully coat these surfaces with vaseline just before cementing the bridge.

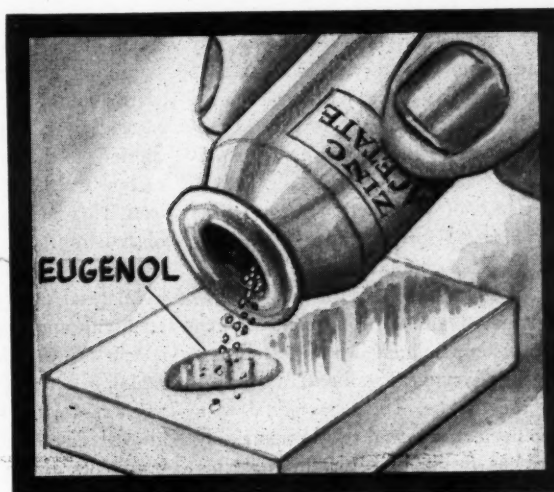


4

Hardening a Zinc Oxide-Eugenol Base

Harold F. Kedian, D.M.D., Watertown, Mass.

5. Place a few zinc acetate crystals in the eugenol on the cement slab before incorporating the zinc oxide powder. This will create a hard, sedative base for metal restorations.



5

Determination of Posterior Periphery for a Maxillary Denture

Frederic L. Stern, D.D.S., Brooklyn, N.Y.

6. Place a quarter-inch strip of adhesive tape across the posterior edge of the prepared maxillary baseplate tray.

Palpate for the hamular notch and junction of the hard and soft palate in the mouth and mark with indelible pencil.

Take the prepared baseplate tray and seat it to position. The indelible pencil line will transfer to the tape and can be scored with a knife. The adhesive is then stripped off and the tray can be trimmed to the scored line.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 236 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

FROM FRACTURES OF THE JAW

H. G. RICHARDS, M.B., F.R.C.S., London

DURING THE past two years 189 cases of fractured jaw, excluding those of malar or zygomatic bone, have been treated at the Plastic Unit, St. Albans. Ten of these suffered from a severe degree of respiratory obstruction. The majority resulted from road accidents; thus it may well fall to the lot of any medical man to deal with this type of case.

Types of Fracture

Type 1—This type is commonly referred to as a fracture of the middle third of the face. When associated with a backward and downward displacement of the middle third, respiratory obstruction may result.

Cause of Obstruction: A possible explanation for the cause of obstruction is that the hard palate, which is displaced with this middle third, carries with it the soft palate, which is thus approximated both to the posterior pharyngeal wall and to the base of the tongue. This, associated with the hemorrhage and edema invariably present, results in respiratory obstruction.

Involvement: This type of fracture often involves the anterior fossa of the skull.

Type 2—When the tooth-bearing fragment carrying the hard palate is displaced backwards the soft palate is approximated to the posterior pharyngeal wall and the base of the tongue, so that the mechanism producing the obstruction is the same as in Type 1.

Type 3—When the anterior fragment of the mandible to which the tongue is attached is displaced downwards and backwards the tongue is also allowed to drop in the same direction, so that its base comes in contact with the posterior pharyngeal wall. This results in severe respiratory obstruction.

Type 4—In this type there is (1) a bilateral condylar fracture associated with angular deformity, and (2) a fracture of the mandible in the region of the midline. These fractures, when associated with a backward and inward displacement of the anterior fragments of the fractured mandible, allow the tongue to drop back on to

the posterior pharyngeal wall, with resulting obstruction.

Type 5—Occurring in the region of the angle of the mandible, this type of fracture often needs no treatment per se. It is occasionally, however, associated with a marked degree of swelling (1) externally, over the region of the angle of the mandible, and (2) internally, involving the cheek, soft palate, base of tongue, and posterior pharyngeal wall. This swelling sometimes causes severe respiratory obstruction, and is due to hemorrhage, probably as a result of rupture of the inferior dental vessels.

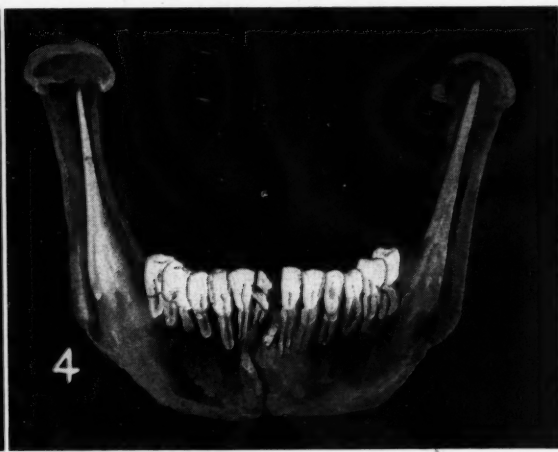
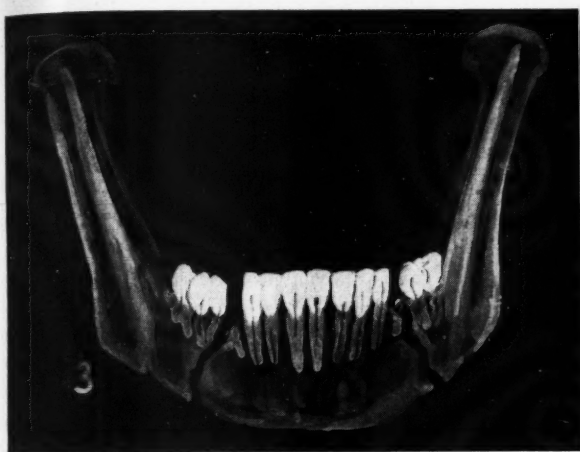
Associated Characteristics of the Condition

Patient Control Impossible—No effort on the part of the patient can relieve the obstruction in these cases, as all local muscle action is limited (1) because of the pain associated with the fracture, and (2) because of local edema and hemorrhage.

Paralysis—In none of these types has paralysis of the palate been noted (1) immediately after the accident, or (2) during the course of the follow-up.

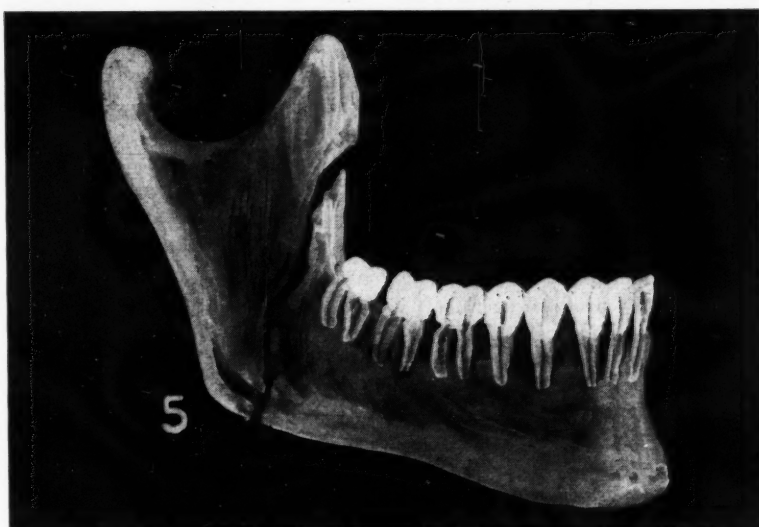
Loss of Consciousness—At the time





of the accident a loss of consciousness often occurs and if intraoral, pharyngeal, or nasopharyngeal hemorrhage occurs, blood may be aspirated into the lungs and respiratory distress further increased. Examination of the chest frequently confirms this.

Prompt Specialized Treatment Necessary—Some of these patients have later described a terrifying journey in an ambulance during which they imagined they were suffocating. Many have arrived in a collapsed condition. One patient, aged 78, arrived in a state of congestive heart failure as a result of the respiratory obstruction.



Treatment

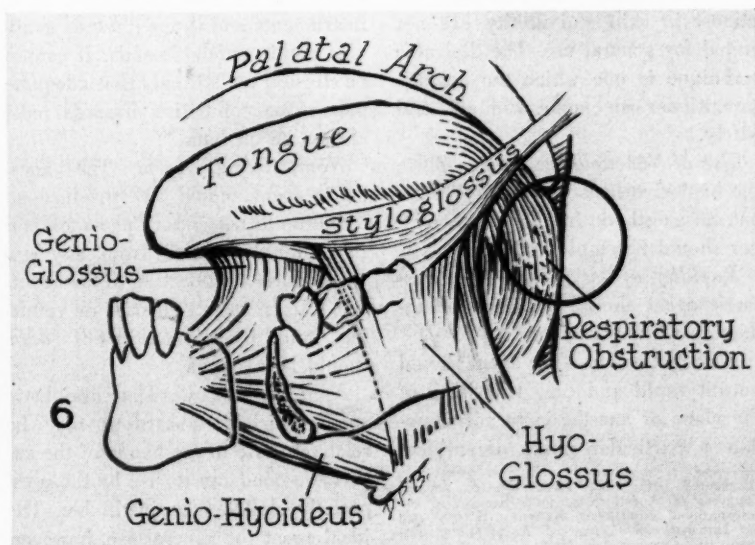
1. When the fracture is reduced and immobilized, the respiratory obstruction is relieved and the patient's condition rapidly improves.

2. On arrival, the majority of patients are unfit for an anesthetic and the lengthy procedure which reduction and immobilization of the fracture with wires, splints, or pins entails. To attempt this is exposing the patient to an unnecessary risk.

3. Frequently, immobilization of a fracture can be achieved only by the use of cap splints, and this means a delay of six to eight hours while they are being constructed.

A Simple Procedure—A relatively simple procedure which has been used to relieve the respiratory obstruction and which can be carried out by any reasonably competent person is the following:

(Continued on page 225)



Anesthesia in Hospital Surgery*

MAX S. SADOVE, M.D. and

BENJAMIN J. GANS, D.D.S., Chicago

Indications for General Anesthesia

General anesthesia is indicated for (1) the small group of patients hypersensitive to local anesthetic agents, (2) procedures of long duration, (3) moderately traumatic procedures, (4) operations in extensively inflamed fields, (5) procedures in which the extent of operation is undetermined, and (6) cases requiring extensive use of cautery.

Ideal Anesthetic

The prerequisites of ideal technique for anesthesia include: (1) safety, (2) convenience and ease of administration, (3) use of nonexplosive agent, (4) rapid induction, (5) easy control, (6) adequate oxygenation, (7) rapid elimination, (8) nonirritating agent, (9) nontoxic agent, (10) economy in administration, (11) relaxation of the muscles of mastication, and (12) freedom of airway.

Safety—It is better to have post-anesthetic nausea and vomiting, headache, or malaise, than to risk the life of the one-in-one-thousand patient. No technique which has a poor safety factor is justified.

Convenience and Ease of Application—Techniques which require the utmost in skill and ability are not suited for general use. The desirable technique is one which the average practitioner can employ with ease and safety.

Use of Nonexplosive Agent—Since the explosive hazard is always present, an anesthetic free from this danger should be employed.

Rapidity of Induction—The anesthetic agent should permit rapid induction without excitement.

Ease of Control—The agent should permit rapid and easy transition of the plane of anesthesia to accommodate a particular phase of surgical

procedure. The ideal agent should afford an easy switch from plane to plane.

Adequate Oxygenation—No technique which precludes adequate oxygenation should ever be used. Reduction of oxygen content below that of the atmosphere, is an admission of error in technique. Until psychometric studies will demonstrate results of inadequate oxygenation, claims for absence of postanesthetic sequelae cannot be accepted.

Rapid Elimination—It is desirable to have the patient conscious with all of his protective reflexes fully active before leaving the operating table. Any agent which induces the patient to sleep for a moderately long period of time after he leaves the operating room, immediately increases the hazard, even though the patient is under continuous observation until return of his reflexes.

Equipment that Should be Available—(1) Complete setup for endotracheal intubation, including tubes and instruments for performing the tracheotomy, and facilities for administering artificial respiration, and (2) facilities for administering supportive therapy, such as vasopressors and fluids for intravenous use. These instruments and drugs must be available within a few seconds. It cannot be stressed too strongly that adequate means for combating hazards must always be on hand.

Nonirritating Agent—The anesthetic agent should (1) produce no irritation of respiratory passages, and (2) should be free from any unpleasantness. In selection of the agent, side effects, such as nausea or vomiting, and unpleasantness of odor should be avoided.

Nontoxic Agent—The anesthetic agent which is hazardous may be relatively safe in the hands of the expert. To condemn its use by those especially skilled is unjustifiable. The ideal agent for general use, however,

should be nontoxic even in the hands of the less skilled.

Economy in Administration—It is desirable that the agent be economically suitable for all conditions.

Relaxation of the Muscles of Mastication—In oral surgery, relaxation of the muscles of mastication is a definite prerequisite, and many agents do not produce such effect until the patient is carried into the relatively deep planes of anesthesia.

Patency of Airway—Probably the most important factor in general anesthesia is control of the airway. Lack of absolute control of the airway must be so assured that it is not jeopardized by blood or other secretions leaking down the back of the throat.

Endotracheal Anesthesia

The most hazardous complications occur from laryngospasm and from obstruction. Use of the endotracheal tube will ensure prevention of these conditions.

Advantages—Endotracheal anesthesia has the following advantages for the oral surgeon: (a) relative freedom of airway, (b) freedom of the operative field from anesthetic equipment, (c) prevention (with cuff or pack) of aspiration of materials into the lower respiratory passage, (d) facility for aspiration of secretions already present in the lower air passages, (e) maintenance of a sterile field because of absence of nonsterile anesthetic equipment, (f) restriction of dead space, especially in children, (g) respiration may be controlled or supplemented facilitating easy control of the anesthetic level.

Satisfactory Technique—The endotracheal nitrous oxide-pentothalcurare technique has many advantages: (1) The level of anesthesia is easily controlled; (2) the patient finds it pleasant; (3) induction is quick without excitement; (4) emergence is rapid and pleasant; (5) it is nonexplosive and comparatively nontoxic; (6) it is nonirritating except from the presence of the endotracheal tube, and relatively safe; and (7) it provides ideal working conditions for both anesthetist and surgeon.

Utilization: This method should

*Presented before the Twenty-Fourth Annual Congress of Anesthetists, Joint Session of the International Anesthesia Research Society and the International College of Anesthetists, Chicago, Ill., October 3-6, 1949.

not be employed by the occasional anesthetist, nor should it be utilized for office surgery. When the operation is short and of a minor nature, and it is in the hands of a skillful surgeon and capable anesthetist, the hazard is minimal.

Laryngospasm: Will curare protect against laryngospasm? Frequency of laryngospasm will be lessened and its duration shortened, but it may occur even with the patient completely apneic.

Administration

Endotracheal nitrous oxide-pentothal-curare anesthesia is accomplished in the following manner: 1. The upper respiratory tract should be sprayed with less than 5 cubic centimeters of 1 per cent pontocaine prior to induction. 2. After topical anesthesia has been completed, a 1 per cent pentothal solution by the drip technique is begun. 3. When third plane anesthesia is established, a calculated dose of curare is given. Curare given intravenously requires five minutes to produce a maximum depth of relaxation of depression. 4. During this time, 100 per cent oxygen can be administered to ensure a sufficiently high concentration of oxygen within the patient's pulmonary bed. Should he develop laryngospasm, this reserve oxygen sustains him without signs of anoxia. 5. While oxygen is being utilized, carbon dioxide is accumulating and will ultimately cause the laryngospasm to relax so that either 100 per cent oxygen can be administered by bag and mask or intubation can be performed.

Factors Responsible for the Laryngospasm—Inadequate dosage and improper timing in use of atropine are factors related to laryngospasm. Atropine, however, is only a relative protector against laryngospasm; and if the stimulus is sufficiently great, laryngospasm can occur in the pres-

ence of even toxic doses of atropine.

Use of Atropine—Another common error is the administration of atropine when the patient is summoned to the operating room. By the time the anesthetic is administered, the atropine has not produced its maximum effect. In the average adult atropine should be given at least thirty, and preferably forty-five minutes, before anesthesia is begun.

Adequate Depth of Pentothal—Another frequent cause of death is failure to utilize adequate depth of pentothal before intubating. The laryngeal reflexes are more active under the lighter than under the deeper planes of surgical anesthesia. It is much safer to obtain relatively rapid induction into the deeper plane of surgical anesthesia before attempting intubation. Many anesthetists prefer to gradually increase the depth until the patient is in the third plane of the third stage.

The Test Dose—Curare is often misused, and before its administration, the anesthetist should inquire carefully regarding the possible presence of myasthenia gravis. In using the test dose, the result is valueless unless a full seven minutes has elapsed after administration of less than 0.5 cubic centimeters. Probably much more information can be obtained by an accurate history.

Second Plan of Administration

1. Adequate sedation with barbiturates is given before the patient is brought to the operating room. In the operating room, the anesthesiologist carefully applies a spray of 1 per cent pontocaine. During this time, a dilute solution of pentothal is administered in concentration sufficient to produce sedation only. The patient should not be put to sleep. 2. It has been found that as long as the patient is awake, the hazard from laryngo-

spasm is small. When desirable, curare can be used as an adjunct to facilitate intubation. 3. The technique of utilizing curare and pentothal merely as facilitating agents is solely for intubation under topical anesthesia, and not for producing surgical anesthesia after intubation. Once the patient has been intubated, the drip pentothal may be quickly increased and surgical anesthesia produced. 4. When there is a danger of obstruction from relaxation of the muscles as a result of sleep, no general anesthetic agent should be used prior to intubation. The endotracheal tube must be inserted in such conditions as (1) infections of the floor of the mouth, (2) fractures of the jaw, and (3) tumors of the floor of the mouth or tongue before the patient is put to sleep. In any instance in which obstruction may occur, it is much wiser to intubate under topical anesthesia and then to utilize the pentothal, remembering that curare has absolutely *no anesthetic properties*.

Summary

Endotracheal nitrous oxide anesthesia with pentothal as a basal agent and curare as supplement is a technique which approaches the ideal in oral surgery. Curare is a *muscular relaxing agent* which has potentialities for both good and evil. When properly used, curare aids in relaxation of muscles of the jaw, thus facilitating intubation. The disadvantage of curare is its potential depression of muscular tone throughout the body.

Even though this and similar techniques are ideal in the hands of the expert, they have no place in the armamentarium of the occasional anesthetist.

Adapted from *Anesthesia and Analgesia* 29:288-292 (September-October) 1950.



Administration of Aureomycin

The antibiotic, aureomycin, is a favorite medicine with many clinicians for certain conditions. It is readily absorbed after oral administration. The effectiveness and ease of oral administration is often seriously impaired by the nausea and vomiting which may be produced by the aureomycin.

In an attempt to alleviate the gastrointestinal irritation, aluminum hydroxide gels, milk, and various alkalis have been administered simultaneously with the aureomycin. The absorption of aureomycin into the blood stream is impaired when aluminum hydroxide gels are administered with the drug.

The most effective agent seems to be milk. Administration of 200 cubic centimeters (one glass) of milk simultaneously with aureomycin prevents gastrointestinal irritation. Studies indicate that milk does not prevent the absorption of the aureomycin into the blood stream.

Such a procedure is highly desirable. It allows the oral administration of the antibiotic without any untoward effects. Concentrations in the blood stream can be maintained with comparative ease.

Bartholomew, L. G., and Nichols, D. R.: Use of Milk to Control Vomiting Caused by Aureomycin, Proc. Staff Meet., Mayo Clin. 25:370-371 (June 21) 1950.



Scalp Massage and Partial Baldness

Upon noticing a thinning of the hair of the head many persons will start on a program of vigorous massage. In some of these it has been noted that the vigorous massage contributes to the patient's baldness.

The usual features of the condition are: (1) The patient complains of patchy baldness of more or less gradual onset, (2) on examination the af-

M E D I C I N E

and the Biologic Sciences



ected site is found covered with short, lusterless, brittle and sometimes twisted hairs, and (3) the areas may be extensive and sharply defined if the patient has for any reason followed one particular pattern of massage or has concentrated on a special area of the scalp.

The hairs may be firmly fixed in the scalp but sometimes come out easily if pulled. The affected hairs are broken off and beneath the microscope the ends may be frayed. The underlying scalp may be normal or reddened from friction. The condition disappears rapidly when massage is discontinued.

There does not seem to be any particular type of lotion which contributes to the condition. Some persons massage the scalp routinely and the damage which may result affects hair which is otherwise normal. Others do not begin to do so until falling hair or some other disturbance draws their attention to the scalp. Massage is more likely to damage hair which is already weakened. An obsessional tendency aggravates the condition.

Bowers, R. E.: Partial Alopecia

Due to Scalp Massage, Brit. J. Dermat. 62:262-263 (June) 1950.



Procaine in Rheumatic Diseases

The effects of cortisone and ACTH in the field of rheumatic diseases are truly dramatic. Still, their use is limited to the rheumatoid type of arthritis. Discontinuance of their use results in a return of the original symptoms. Therefore, other agents must still be included in the therapeutic armamentarium.

Procaine serves a useful place in this respect. Its use is not confined to any particular type of arthritis. It finds broad application in all types of rheumatism (arthritis, fibrositis, bursitis, or neuritis) whenever pain and disability manifest themselves, particularly in a localized area.

The value of procaine lies in its analgesic effect, which is often prolonged. And too, it has a relaxing effect on spastic muscles. Motion is restored and disability, as well as atrophy of disuse, is thus prevented.

The drug does not solve the etiologic problem of "rheumatism." It subserves a therapeutic function which in many instances may be equivalent to a "cure." In the long run the patient is less concerned with the etiology of his condition than with the outcome.

The indication for procaine injection is pain in the skeletal structures, with or without limitation in motion in areas preferably well defined and localized. (1) Bursitis of the shoulder, (2) lumbago, and (3) sacroiliac strain are true indications for injection. The contraindications are (1) widespread involvement of the disease, (2) acute inflammatory areas, (3) advanced diabetes or cardiac disease, (4) general debility, (5) psychoneurosis, and (6) known procaine sensitivity.

The dosage varies from 5 to 30 cubic centimeters. The concentration used is generally a 1 per cent aqueous solution, although a 2 per cent solution is sometimes used where the total amount injected is small. The number

of injections varies with the condition and the response. The interval is usually semiweekly or weekly, although in severe cases, daily injections may have to be given. As the condition improves, the interval is lengthened.

The types of injection are local and regional. Local injections are given in tender spots at the site of maximum pain as elicited by deep pressure. After preliminary skin anesthesia, the tender points are infiltrated with 5 to 20 cubic centimeters of procaine and gently massaged for a few moments.

Regional anesthesia is more exacting. Effective techniques have been developed to produce excellent anesthesia. Repeated injections raise the threshold of pain and produce a state of analgesia. This permits the restoration of function and the early return of the subject to his accustomed tasks.

Lipkin, Ezra: *Procaine in Rheumatic Diseases*, J. Michigan M. Soc. 49:1081-1083 (September) 1950.



Climate and Hemorrhage

Periods of increasing humidity and lowered barometric pressures are associated with an increased tendency to hemorrhage and thrombosis. These periods are noted with the passage of a "warm front." Such tendencies have been observed in a wide variety of medical and dental situations.

The biochemical, biophysical, and endocrine equilibrium of the person is maintained within a limited amplitude under stable environmental conditions. When the environmental situation changes, the organism must in turn make proper compensatory adjustments by means of the autonomic control of the endocrines and the circulation.

The passage of a cold air mass will be associated with (1) an increase in blood pressure, (2) a relative alkalosis, (3) increase in tissue turgor, (4) shortening of smooth muscle, and (5) change in the leukocyte

count. And too, there is a change in the coagulation time and in the adhesiveness of the endothelium.

This status is reversed in the course of time as the organism seeks to reestablish the equilibrium. If, however, the reversal of the autonomic status is now coincident with the passage of a tropical or "warm front," blood pressure will decline markedly with (1) dilatation of peripheral vessels, (2) increased adhesiveness of the endothelium, (3) venous stasis, and (4) accentuation of bleeding.

These hemorrhages seem to occur in association with environmental temperature peaks. The significant factor seems to be the change in temperature and not the degree of temperature.

James, Allison A.: *Hemorrhages Following Tonsillectomy and Adenoidectomy*, Ann. West. Med. Surg. 2:558-562 (December) 1948.



Characteristics of Pernicious Anemia

Pernicious anemia is a deficiency disease due to failure to assimilate essential material from food. The condition is manifested as a macrocytic anemia associated with disturbances of the gastrointestinal tract and frequently the nervous system.

Untreated, the disease progresses over a period generally of about three years to a fatal termination. With adequate treatment the blood becomes essentially normal, digestive symptoms vanish, and manifestations referable to the nervous system become completely arrested.

The disease occurs particularly in the fourth and fifth decades of life. It is most common in blue-eyed people of northern European stock. Typical cases have occurred in essentially every race including the Negro. A familial tendency is common.

The onset of the disease is usually insidious. Gastrointestinal, neurologic, or cardiac symptoms frequently precede the development of obvious anemia by many months. Every pa-

tient of middle age or over who complains of (1) indigestion, (2) flatulence, (3) anorexia, (4) gallbladder attacks, (5) diarrhea, or (6) soreness of the tongue must have the diagnosis of pernicious anemia excluded. A beefy, inflamed, or a pale smooth tongue, although found in other deficiency diseases, should always arouse the suspicion of pernicious anemia.

Any patient with persistent paresthesias of the hands or feet together with anemia should be considered to have pernicious anemia until proved otherwise. The numbness and tingling of the extremities in pernicious anemia differ from that encountered in many other severe anemias and in circulatory disturbances in being relatively constant over long periods of time.

The blood picture in well-developed pernicious anemia is typical of diminished productivity of the bone marrow. There are decreased numbers of white blood cells and blood platelets as well as red blood cells. The number of red blood cells is usually below 2,500,000 per cubic millimeter. The typical blood cell picture is easily recognized but when cases are seen early or in remission, changes in the blood may be absent or slight.

The importance of accurate diagnosis must be emphatically stressed. Once adequate treatment has been started and the blood has returned to normal there is no way now available by which the diagnosis can be subsequently corroborated other than by omitting treatment and waiting weeks or months for a relapse to occur. This is a dangerous procedure in view of the possibility of fulminating and irreversible neurologic damage.

Most cases are treated with an initial administration during the first week of U.S.P. units of liver extract or 50 micrograms of vitamin B₁₂. Following this, 15 U.S.P. units of liver extract or 15 micrograms of vitamin B₁₂ are given once weekly by injection until the blood values are entirely normal. If there is considerable involvement of the nervous system it may be advisable to continue with weekly injections for the first year. Otherwise it is generally recom-

mended that injections be given every two weeks for the remainder of the first year and thereafter the frequency diminished to once every four weeks.

The four-weeks interval seems to be best for the majority of patients. The advantages of giving liver extract or vitamin B₁₂ injection as opposed to the oral route are many: 1. The quantity required is far less than that necessary by mouth and accordingly the expense is materially reduced. 2. The factor of intestinal impermeability is circumvented. 3. The physician, having injected the potent material, knows it is effectively within the body and need not fear oversight in treatment on the part of the patient.

Folic acid should not be given to patients with pernicious anemia except as an experimental procedure. Evidence now available clearly shows that a significant proportion of patients with pernicious anemia who are given only folic acid will show neurologic relapse. Increasing the amount of folic acid administered daily does not benefit the neural relapse and in fact may even make it worse.

A well-balanced, nutritious diet is encouraged for these persons. No other special dietary regimen is indicated. Occasionally pernicious anemia will be associated with an iron deficiency. This will become manifest after a month or two of treatment with liver extract by the appearance of a definitely hypochromic blood picture. The iron deficiency may be corrected by administering 5 grains of ferrous sulfate three times daily for a period of one month.

Strauss, Maurice B.: Modern Treatment of the Anemias, M. Clin. North America 34:1291-1304 (September) 1950.



Penicillin in Patients with Congenital Heart Disease

The American Council on Rheumatic Fever of the American Heart Association has gone on record as recommending specific dosage for the administration of penicillin before dental extractions and removal of

tonsils and adenoids in rheumatic individuals or patients with congenital heart or blood defects. Such a procedure is done to prevent the possibility of subacute bacterial endocarditis developing.

Following dental extractions and removal of tonsils and adenoids, bacteria are frequently present in the blood stream for short periods of time. In rheumatic persons or in patients with congenital heart disease these bacteria may lodge in the heart valves and cause bacterial endocarditis. Although a variety of bacteria cause this disease the majority of cases are due to alpha streptococci (streptococci viridans). Alpha streptococci are usually resistant to sulfa drugs. Therefore, penicillin is recommended for prophylaxis.

Specific recommendations are the following: (1) Except in emergencies, operative procedures in rheumatic persons should be deferred until there is no clinical evidence of rheumatic activity and laboratory tests indicate that the rheumatic process is subsiding. (2) Patients should be free from upper respiratory infections. (3) Minimum dosage of penicillin is (a) 300,000 units of aqueous penicillin intramuscularly 30-60 minutes before extraction or operation and (b) 300,000 units of procaine penicillin in oil injected intramuscularly at the same time in a different site.

Penicillin prophylaxis is not necessary for the extraction of deciduous incisors unless infection of the gingival tissue is present. It should be used for the extractions of (1) deciduous molars, (2) all permanent teeth, and (3) for tonsillectomy and adenoidectomy. In most instances it is best to extract one tooth at a time. Multiple extractions should be avoided. In cases of extensive gingival infection or severe root infections it is advisable to give several doses of penicillin starting the day before operation and continuing one or two days thereafter.

Editorial: Penicillin Dosage in Rheumatic Individuals and Patients with Congenital Heart Disease, Journal Michigan M. Soc. 49:1095 (September) 1950.



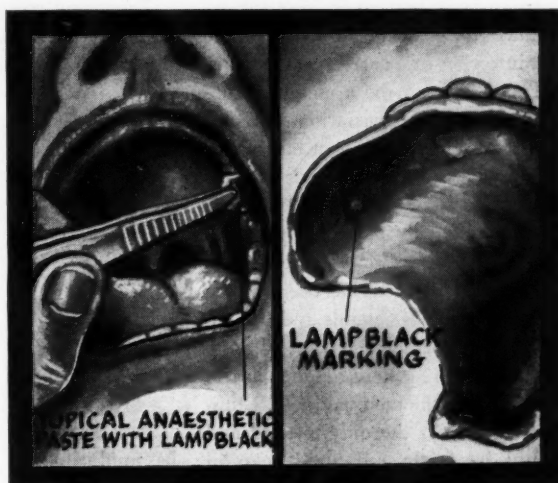
Common Cold—Problems

There has always been some confusion as to just what a cold really is. For a clear understanding two criteria must be recognized: (1) the subject must be perfectly well before the onset of the "cold," and (2) he must have no chronic nasal disorder to confuse the picture.

With these criteria in mind the cold can be considered as a disease with definite characteristics: (1) There is an onset with a constitutional reaction (malaise, chilliness, dullness, aching) which often precedes local symptoms by several hours. (2) In some cases there is a slight fever. (3) Local burning and discomfort or dryness of the mucosa of the upper air passages are present. These symptoms may start in the pharynx, the nasopharynx, or even in the larynx, as well as in the nose. (4) The discomfort usually spreads up or down during a period of a few days, depending on the site of onset. (5) There are no visible lesions in the throat, nasopharynx, or larynx during the early stages. Even when the patient is extremely uncomfortable there are few abnormalities to be seen. (6) The disease is of limited duration and never lasts over five to seven days unless complication occurs. However, there may be fatigue, raw nose or throat or dry cough for days or weeks. (7) There is leukopenia or absence of leukocytosis. (8) There is tendency to complications (sinusitis, purulent rhinitis, otitis, bronchitis) associated with ordinary bacteria. There is never any heavy purulent exudate until secondary infection sets in.

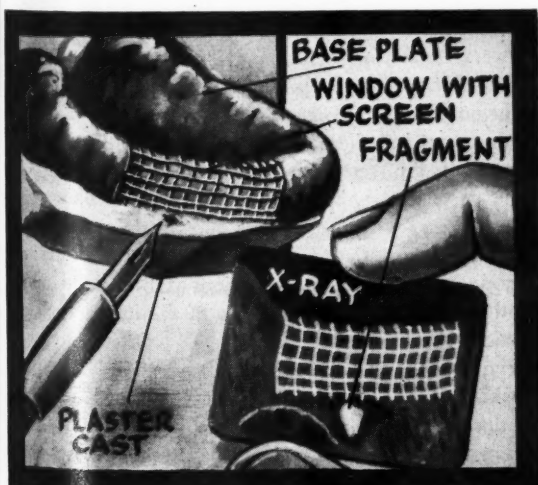
The true common cold has definite clinical features and is to be sharply distinguished from the group of conditions with which it is so often confused; namely, the various forms of traumatic rhinitis. A severe cold may be indistinguishable from mild influenza.

The present concept seems to be that the true cold is a virus infection. Exposure to cold or other trauma may



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at times be important in lowering resistance to external infection or to autoinfection in a carrier of the virus.

There seems to be a curious problem of seasonal variation. In this country colds are not seen much during July and August. Persons who are susceptible at other times of the year are immune during these months. However, in September colds begin to appear. This event has been related to the opening of schools and the onset of cold weather.

There is no specific diagnostic test available for the common cold. Clinical diagnosis is the only method and should be fairly reliable if careful attention is paid to the characteristics of the disease. Usually the illness is too trivial to stimulate the practitioner to careful examination. The patient is then allowed to make his own diagnosis.

No method of proved value has been found for prophylaxis. There are many reports on the value of antihistaminics. Recent evidence indicates that the antihistamines have no effect on the course of the ailment. Early nasal symptoms are sometimes relieved.

There has been considerable discussion as to the use of antibiotics in colds. In a general way, virus diseases are little, if at all, influenced by the antibiotics. (Aureomycin seems to be of some benefit in virus pneumonia).

Treatment remains largely symptomatic; rest, safeguarding, local applications, and general sedation.

Bloomfield, Arthur L.: *Some Problems of the Common Cold*, J.A.M.A. 144:287-292 (September 23) 1950.



Psychiatry in Geriatrics

Psychiatry is generally thought to be applicable largely to the young adult and the middle age groups. However, maladjustments and behavioral breakdowns occur at a high rate in the age group 65 and over.

The physical aspects of the aging process are of definite etiologic significance. Common manifestations of aging are (1) narrowing of the cerebral arteries, (2) poor absorption of vitamins, and (3) endocrine imbalance.

Social elements also play a part. The older person is shunted away from both the work group and the family setting. The family group scatters, friends and relatives die, and the aged person is left without firm social ties.

Elderly persons of a stable personality tend to withstand considerable

amounts of cerebral damage and environmental pressure without exhibiting serious psychiatric manifestations. On the other hand, persons who have been poorly adjusted earlier in life often fare badly under such conditions.

The family can do much to provide for the aged person's psychologic needs. Such help on the part of the family and other associates is necessary in order that self-esteem may be maintained.

There are six essential needs in considering this problem for the elderly: (1) The need for affection, to live in reciprocal warm regard with one or more human beings. (2) The need for belonging, to be a desired and desirable member of a group. (3) The need for independence, to order one's own life reasonably and make one's own decisions. (4) The need for achievement, to do things, to accomplish tasks, to create things, and find success. (5) The need for recognition, to feel that personality and conduct meet the reasonable opinion of one's equals. (6) The need for self-esteem, to feel that personality and conduct come up to one's own inner standards.

Gardner, W. P.: *Psychiatry in Geriatrics*, Minnesota Med. 33:353-355 (June) 1950.

Respiratory Obstructions from Fractures of the Jaw

(Continued from page 219)

1. A Number 8 or Number 10 Magill nasopharyngeal tube lubricated with 5 per cent cinchocaine hydrochloride (percaïne) ointment is passed through one or the other nostril. It may not be easy to do this if the septum is deflected or the nose fractured and a little manipulation may be necessary.

2. Some difficulty is invariably encountered in passing the tube once it has reached the posterior pharyngeal wall. Continuous gentle pressure, however, usually results in the tube slipping past the obstruction and respiratory excursions immediately take place freely through the tube.

3. The patients are relieved, anxiety is allayed, and recovery from shock is rapid. The fact that obstruction invariably occurs at the posterior pharyngeal wall indicates that there is approximation of the base of the tongue, the palate, and the posterior pharyngeal wall.

Procedure in the Presence of Aspirated Blood—1. In cases in which blood has been aspirated into the lungs a flexible gum-elastic catheter is passed via the nasopharyngeal tube into the trachea and bronchi, and the blood aspirated. If the patient is still in a confused state, this procedure causes no reflex attempts at coughing.

2. In cases in which the level of consciousness is not depressed, the gum-elastic catheter will produce a laryngeal reflex which will distress the patient, and it is best then to discontinue the attempt to aspirate.

3. Aspiration, when it does not cause distress, is essential, as the patient is either unable or unwilling to cough. Retention of the blood may lead to collapse of the lung or pneumonia.

4. Periodic aspiration of the pharynx is also performed for the purpose of removing saliva or any oozing which may take place, as the patient is unable to swallow or cough.

Additional Advantages in Removing Obstruction—1. Occasionally these fractures, particularly Type 1, are associated with head injuries. It is of the utmost importance in these cases that the respiratory obstruction be relieved and cerebral congestion avoided.

2. Relief of the obstruction, by decreasing restless movement, also allows satisfactory x-ray pictures to be taken.

Summary

1. Five types of fracture of the jaw which may give rise to respiratory obstruction are described and illustrated.

2. The importance of prompt relief of the obstruction is stressed.

3. Treatment by means of a Number 8 or Number 10 Magill nasopharyngeal tube, with periodic aspiration of the pharynx to remove saliva or oozing, is described.

Adapted from *British Medical Journal* No. 4662:1113-1114 (May 13) 1950.

A Study of Oral Calculus

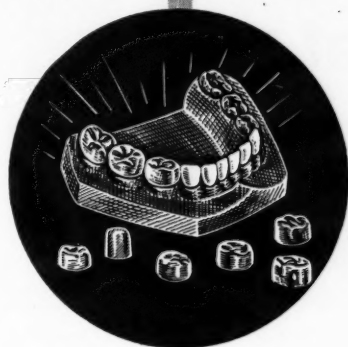
Factors Influencing the Tendency of Salts to Stay in Solution

1. Prinz and Bibby quoting Kirk state that the salts are held in solution by the acids and that any substance which could eliminate the acid element (1) by the evaporation of carbonic acid, (2) exhalation of ammonia in the breath, or (3) introduction of a basic substance in the saliva would produce a precipitate.

2. Kelsey demonstrated that as the saliva enters the mouth it meets with the atmospheric oxygen, acids, and ferments derived from decomposing food debris. This creates an unstable solution which releases carbon dioxide, thus making the saliva lose its power to hold salts in solution.

3. Carbon dioxide increases the solvent power of the saliva for calcium salts, hence, if the carbon dioxide is decreased, there is a lowered

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solvent power leading to precipitation of calcium carbonate and tricalcium phosphate.

4. Evidence that in vitro no precipitate takes place until sufficient carbon dioxide has escaped to bring the pH over 7.4 is presented by Naeslund. His investigations on the pH in calculus-susceptible people showed that the escape of carbon dioxide from the oral cavity is not sufficiently great to result in an appreciable precipitation. He further stated that carbon dioxide loss must occur

normally in all people, yet tartar occurs only in certain persons.

5. Bibby found an inconsistent inhibition of deposition when the carbon dioxide was added to precipitating systems in vitro, and reported that the effect seemed to be a bacterial interference rather than a direct effect on the solubility of the contained salts.

6. The sequence of events in the formation of calculus as outlined by Prinz: (a) A local stagnation of
(Continued on page 230)

MINUTES that mean MONEY — your money!

YOU DON'T NEED TO BE TOLD about the supreme importance of time in dental practice. You know it only too well. That minutes mean money—your money. That your net income depends upon your productive time—depends upon avoiding wasting your time. Like nearly every other dentist, you are no doubt always eager for information about time-saving methods. So you will likely be glad to hear about this one. It is simple, time-tested, and costs but little.

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What are the charts?

Here are brief descriptions of not all but some of them:

Chart 1—Dental Conditions: This big full-color chart clearly illustrates 37 dental conditions from first-degree occlusal caries to pyorrhea pockets. Details are enlarged many times natural size.

Chart 2—Development and Eruption of Teeth: Seven color illustrations carry the process from age 2 through age 12.

Chart 3—The Progress of Tooth Decay: Three large full-color illustrations show a small cavity starting in the enamel and carry through to the final result: general systemic disease.

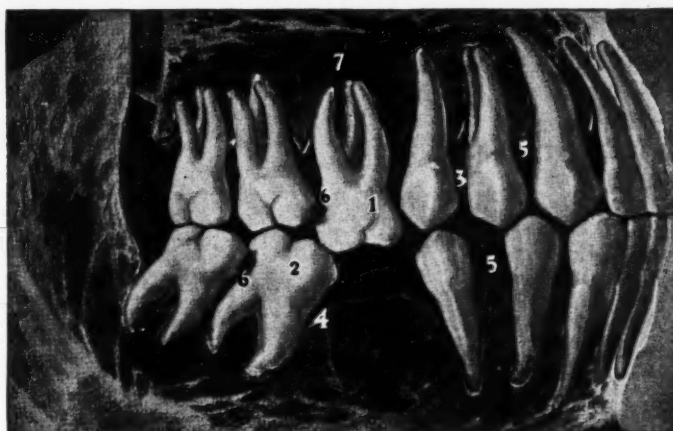
Chart 4—Why Construct a Bridge?: Dentists tell us that many patients have been convinced by this single chart—a full-color illustration of normal conditions contrasted with graphic proof of what happens when a needed bridge is not provided. This chart alone can be worth infinitely more than the cost of the chart book. Many dentists have found this to be true. (See cut.)

Chart 5—How Irregularities of the Teeth Affect the Face: Another full-color chart which quickly makes clear to parents the perils inherent in neglecting needed orthodontic treatment.

Chart 6—Modern Porcelain Restorations: Four full-color illustrations which patients can comprehend almost at a glance—making clear the advantages, and saving time you might otherwise be forced to use in presenting your recommendations.

Chart 7—The Expense of Poor Dentistry: Eight full-color illustrations make clear, even to an uneducated patient, the folly of cheap dentistry.

Chart 8—The Development of Root-End Infections: Four large full-color illustrations present facts that patients would otherwise not comprehend, and would accordingly neglect treatment.



Part of Chart 4, showing the patient what happens when a tooth is not replaced.

Chart 9—A Stitch in Time Saves Nine: Two big full-color drawings show the conditions prevented by timely replacement of a lost tooth with a bridge.

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When the Dentist Fills the Tooth
Things Are Not Always What They Seem
The Development of Jaws and Teeth
(18 graphic X-rays)
The Collapsed Face
The Circulation of the Blood
Pyorrhea Treated or Neglected
The Action of Local Anesthesia
A Little Neglect May Breed Mischief
The Fifth or Trigeminal Nerve
Danger Begins at Six
How a Full Denture Fits
How the Loss of Teeth Affects the Face
The Danger from an Impacted Tooth
What Does the X-ray Show?
The Requirements of a Correct Restoration

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including a remarkable 4-page chart, The Dangers from Pyorrhea and Possible Complications. This is a most unusual chart. One page folds over to make contrasting data more graphic. In a few minutes, you can show a patient how neglected pyorrhea can result in setting up serious secondary diseases.

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133 INDIVIDUAL ILLUSTRATIONS: There are actually 133 *individual illustrations*. Of the 31 charts, 20 are printed in full color, 8 in two colors; only 3 are in black and white. Every one of the 133 illustrations, every one of the 31 big charts was carefully planned to provide you with *time-saving*, convincing data for chairside use. And at negligible cost, \$1 to Digest subscribers, \$2 to non-subscribers, or \$1 with a new subscription to DENTAL DIGEST. The coupon makes ordering easy. If you send it now, *Visual Education in Dentistry* will reach you quickly—and you can start saving minutes that mean money.

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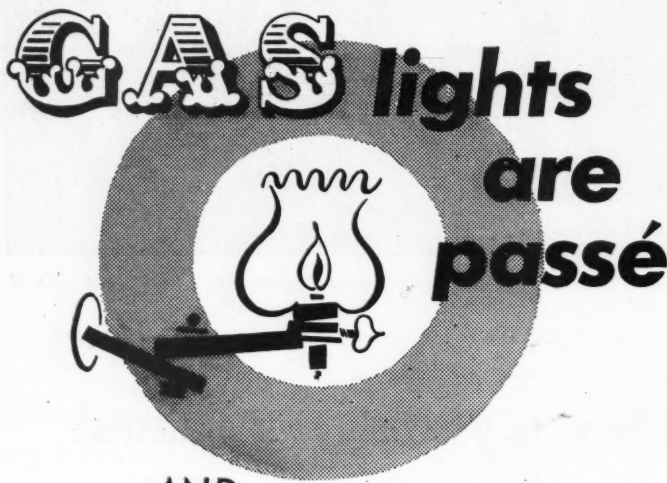
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(Continued from page 227)

saliva which permits surface concentration of colloids, (b) precipitation of calcium salts, (c) trapping of the freshly formed colloidal stroma which causes it to sink until it meets an obstruction, (d) the attachment of the impregnated film to any sheltered rough surface which, with the aid of mucin, serves as a nucleus, (e) the formation of successive films which become impregnated.

7. The theory related to the stagnation of the saliva has some doubt-

ful assumptions: (1) Calculus forms by preference on certain specific surfaces of the teeth, some areas of which can hardly be said to afford better conditions for stagnation than others, (2) the relation of the favorite areas of deposition suggest not stagnation, but free flow.

8. The separation of the salivary calcium and phosphate to form calculus depends on the two opposing forces, (1) those trying to keep the salts in solution (the hydrogen ions, proteins, and amino acids), and (2)

those tending to drive them out of solution (the hydroxyl ions, increases in calcium, phosphate, and ammonium ions, loss of protein from the saliva, and loss of bicarbonate ions through the carbon dioxide).

9. Fosdick and Starke, quoted by Rapp, found that calcium, phosphate, and hydrogen ions interrelated so that at a given calcium and phosphate concentration there is a corresponding pH value below which the solid phase will go into solution.

10. Rapp's experiments demonstrated (1) that calculus-free persons had a higher critical pH than the calculus-positive group, and (2) that the greater difference between the actual pH and the critical pH of the calculus-positive group would indicate that this saliva requires a little alkalization for the precipitate of the insoluble salts out of the solution.

Relationship Between Nucleoproteins and the Process of Calcification—Studies on the chemistry involved in bird shell formation showed that the insoluble salt of calcium precipitates as a result of an acid reaction in the tissues. This precipitate was called "Kalkfanger," which means to have an affinity for calcium. In this theory of the attraction of calcium it is assumed that in the destruction of tissue rich in nucleoprotein, phosphoric acid is liberated to serve as the "Kalkfanger." The phosphate ion, electro-negatively charged, combines with the positively charged calcium ions to form calcified masses.

Inflammatory Process of the Interdental Papillae—This process adjacent to an accumulation of calculus is beset with many degenerating leucocytes. In their study of the *Endamoeba gingivalis* Kofoed and Hinshaw suggested that the amoebae may ingest the denuded nuclei of these cells, and following digestion can eject from their food vacuoles their liquified contents.

The chromatin-rich nuclei contain nucleoproteins which have a large proportion of phosphorous, a potential contributor in later stages to granular homogeneous material consisting mainly of disintegrated cells in progressive transformed layers.

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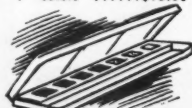
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the phosphate of calcium in calculus. This presents further support of the theory that irritation and infection of the gingival tissues may be instrumental in the release of nucleoproteins which in turn liberate phosphoric acid and continue to the formation of calculus.

Microorganisms

(1) Klebs, Goodrich and Mosely attributed the precipitation of the calcium salts to the *Leptothrix buccalis* organism.

(2) Bulleid studied this *Leptothrix* organism and found that no smear taken from the tartar anywhere in the oral cavity failed to show its presence.

(3) Taylor's microscopic studies consistently showed the presence of a network of thread-like organisms.

(4) This organism was also demonstrated by Bibby whose research proved that calculus could not be formed without bacteria. His conclusion, however, was that bacteria alone do not cause the precipitate but that they probably are involved in the fixation of the precipitate to the teeth.

Liberating Phosphate Ions—The ability of *Actinomyces israeli* to liberate ions from organic combination was demonstrated by Citron who presumed the involvement of an alkaline phosphatase. The author related this activity to the formation of a calculus by the metabolic activity of the gungi, provided there is a sufficient quantity of alkaline present. It was demonstrated that none of the six strains studied had the ability to (1) decompose protein, (2) raise the alkalinity of the medium, or (3) precipitate calcium from any solution that did not contain phosphate ions.

Microscopic Evidence—A detailed microscopic study was made by Box in which he noted (1) the zones in the layer of organic material between the epithelial lining of the gingival crevice and the mass of the calcified deposit, (2) a layer of desquamated epithelial cells and leucocytes next to the epithelial lining and occasional red blood cells, and (3) between this layer and the calculus proper a finely

The numerous groups of colonies which resembled *Actinomyces*, Box associated with an agglomerate of calcifying material which would later become fixed to the main deposit. This microscopic evidence supports the view (1) that the calcifications are often the result of inflammation, and (2) are derived from exudative products that accumulate in the gingival crevice.

Phosphatase

1. Adamson reported that the saliva and blood serum contained phosphate containing complexes, probably phosphoric esters, which are capable of being hydrolyzed by the enzyme to produce free inorganic phosphate. With favorable conditions the liberated inorganic phosphate will form concretions. Trauma of the gingival tissue may release the phosphatase.

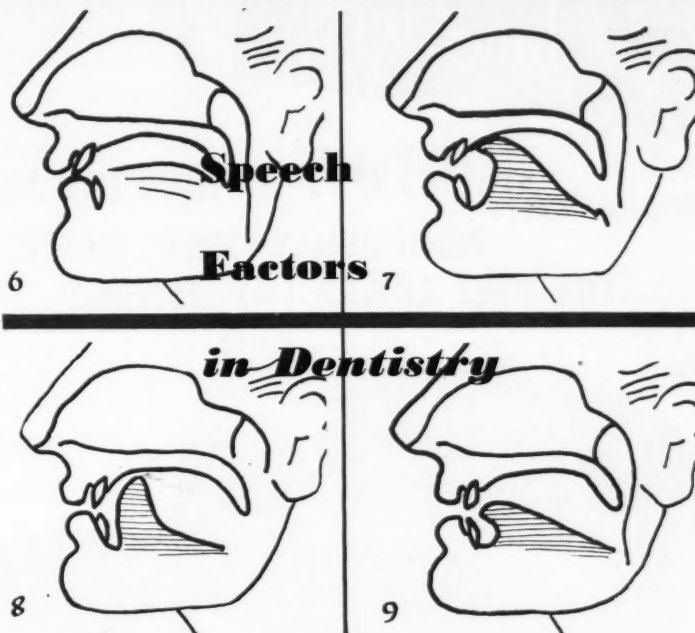
2. The calcification of the epithelium of the gingival tissue resulting from a liberation of the phosphatase from desquamated cells was described by Smith: (1) The retrogressive changes in the epithelium was associated with local as well as systemic causes. (2) Destruction of bacteria did not alter the phosphatase content of saliva. (3) The use of the toothbrush on the gingivae and that the presence of inflammation with increased desquamation of cells augmented the phosphatase.

3. Zander in a biohistologic investigation showed that the phosphatase is present only in the capillary walls and possibly in collagenous fibers, not in the epithelium, and discusses the fact that the enzyme found in the saliva of normal persons can only be derived from the bacterial flora, whereas in gingival inflammation the epithelial lining of the pocket is destroyed, exposing the subepithelial tissue which has capillaries containing the phosphatase. The calculus may be derived from material from the exuding serum.

Systemic Influences

1. Emotional states with an alkaline correlated the inverse relationship of salivary viscosity to deposit of cellular debris *in vitro*:

In your ORAL HYGIENE this month



"Three specialties of dentistry necessarily include speech factors. They are orthodontia, cleft palate rehabilitation in oral surgery or in the making of an obturator, and prosthetics."

Doctor Howard E. Kessler explains, by text and by detailed illustrations, the speech factors in dentistry, in order to aid the dentist to improve his treatment of varied oral problems.

"Who Said Dentists Don't Want Social Security?" Doctor Arthur J. Nagy asks the question and answers it with the results of an eight-year study which shows that dentists recognize the need for financial aid—the sort of aid Social Security provides—in old age.

"We are still living in the bacteriologic age, but this theory is being forced against the wall slowly and surely by other concepts," says Doctor Harold S. Jones. His article "Emotional Stress and Gingivitis" treats gingivitis as a symptom of mental or emotional distress.

"What's Wrong with Referrals?"

Charles P. Fitz Patrick discusses this interesting subject in a short article which will be of interest to every general dental practitioner—and to every specialist too.

"A dentist can educate the public to regard the dentist as a physician of the mouth even though he uses amalgam for restorations and replaces missing teeth with good cast partial dentures instead of precision appliances," claims Doctor Bernard J. Fried in his article, "I'm a 'Bread and Butter' Dentist." Less expensive dentistry of good quality is a definite health service.

A British dentist points out fallacies in long-accepted dental interpretations in the article "Dental Facts and Fantasies." Doctor Alex MacGregor presented his paper at the Annual Meeting of the British Dental Association in Birmingham.

Of course, in addition to these articles, you will find all of the regular monthly departments and features rounding out an interesting cross-section of dental thought.

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line tide in the body have an effect on salivary secretion with a resulting hyperformation of calculus.

2. The acidosis created in diabetes has been considered a factor in producing a phosphaturia where there is an enormous output of calcium salts and phosphoric acid.

3. That diet influences the alkaline tide was described by G. V. Black who experimented with the deposition of calculus after meals of varying sizes. Large meals increased the deposition considerably, and the

quality of the food was a factor in its formation.

4. Badanes related the acidosis produced by excess fats in the diet to the solution of phosphate.

Physical Factors

Routine toothbrushing is recognized clinically to lessen the quantity of the deposit. As previously stated, the phosphatase in the saliva is shown to be less if the gingivae are brushed thoroughly. Willsmore, quoted by Rosebury and Karshan,

correlated the inverse relationship of salivary viscosity to deposit of cellular debris in vitro:

1. Persons having no tendency to deposit debris, usually having also a high viscosity, but who brushed their teeth twice a day, showed no calculus.

2. In the nonbrushers with a marked tendency to deposit debris and a low viscosity, a majority showed abundant calculus.

Use of Tobacco—The occurrence of calculus has been related to the amount of tobacco used daily. From the nonsmoking group to those smoking excessively there is shown to be a progressive increase in the amount of supragingival and subgingival calculus.

Detergent Foods—(1) Less calculus formed on the teeth of ferrets when bone with its muscular and tendinous attachments were added to the diet.

(2) In his review of the literature on the relation of the physical character of the food to the health of the periodontal tissues, O'Rourke comments that despite the inconclusive evidence it can be fairly well assumed that the use of detergent foods is an inhibiting measure in calculus formation.

Conclusion

1. It is generally believed that the separation of certain components from the saliva to form calculus depends on the forces tending to keep the mineral salts in solution, and those tending to force them out, as well as the influence of microorganisms and enzymes.

2. Discussion of the relative occurrence of dental caries and calculus opens controversial points concerned with the unsolved problem of the etiology of caries. The possibility of a protective mechanism by calculus on the tooth surface is clinically substantiated by the generalization that persons with excessive tartar formation tend to be more rather than less free from carious lesions.

Adapted from *Tufts Dental Outlook*
21:6-12 (June) 1948.

Contra- Angles



The Myth of the Jolly Fat Man

Obesity and dental caries frequently go hand in hand. The starch and sugar diet that puts on weight also supplies the carbohydrates for degeneration in the mouth that produces caries. The two processes may not occur at the same time. The post-adolescent youth and the young adult have the highest caries rate. They also are more inclined to leanness and are usually free from deposits of unwanted fat. When middle age approaches, the caries rate usually drops and the fatty tissue begins to accumulate. With the approach of senescence, the body often returns to the slenderness of the youthful years and the carious process recurs. There



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are few fat old people and few, for that matter, of the aged who are free from serious dental disturbances. This despite the tales we hear about grandfather who never lost a tooth until he was ninety. There are probably some fancy biochemical explanations for these phenomena but at the present level of our knowledge we have great voids of ignorance.

Most all of us, when we leave the pleasant middle thirties, when our forebrains begin to soften as described by William Sheldon, must face the prospects of obesity. The middle-age protuberances come from living too well and not often from glandular dysfunction. It is satisfying to rationalize and tell ourselves that excess weight is inevitable in middle life and that it is one of those things over which we have no control. When we tell ourselves that we are practicing self-deception. Most obesity comes from living too high on the hog and acting like one.

The *British Medical Journal* sketches this portrait of many of us and our friends:

"Obesity presents social as well as physical dangers. For the first of these we are consulted largely by women. Anxious mothers bring their young daughters bulging with puppy fat derived from a free flow of buns, sweets, and other carbohydrate foods. Puberty is perhaps delayed and the parents have no doubt that it is 'a question of glands.' Treatment is demanded but seldom necessary. As the endocrine glands adjust themselves to the change from girlhood to womanhood, so one finds the previous rotundity giving place to the elegant figure of complete femininity. The direct influence of hormones on the loss of fat is probably negligible; it is the indirect effect which is important, in that the girl's interests change direction and her desire to be attractive leads automatically to wise eating.

"If corpulence persists into late adolescence the problem is more serious. By this time we have a young woman who recognizes that she is different from others, that for her the parties and dances she attends will but

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CLINICAL AND LABORATORY SUGGESTIONS

(See pages 216 and 217)

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Explanation of Procedure:

Sketch:

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emphasize her unattractiveness and produce profound depression only thinly veiled by the forced gaiety of the rotund.

"The married woman who has 'run to fat' after several pregnancies is assailed with fears that she will lose her attractiveness and thus her husband.

"It is not often that men complain of fatness on social grounds, partly because fat young men are rare compared with women and partly because, once married, their wives practice the age-old tradition of furthering their corpulence by overfeeding. A 'comfortably' obese male is alleged to be easier to live with and less likely to stray from the path of virtue.

"The physical drawbacks of obesity increase in importance with age. That the expectation of life is shortened by corpulence is reflected in all insurance companies' figures. It is not so much a question of being over weight for a given height as of the abnormal distribution of excess weight. The belly measurement catches up the chest circumference, then passes it, and within a year or two that ominous bulge which hides the feet from the victim's eyes presents a signal which if disregarded may spell disaster. The increased risks to the obese of postoperative embolism and pulmonary collapse, of diabetes, hypertension, osteoarthritis, bronchitis, and various skin diseases, are well known and need no elaboration. The strain on an aging heart even if unaffected by disease must be considerable. If a patient be resistant to a suggestion of dietetic restriction it is not a bad plan to ask him how he would feel if he carried with him all day a suitcase weighing 56 pounds. A parallel to this and the strain imposed on his heart can be drawn. This may not be quite fair, but the end justifies the means.

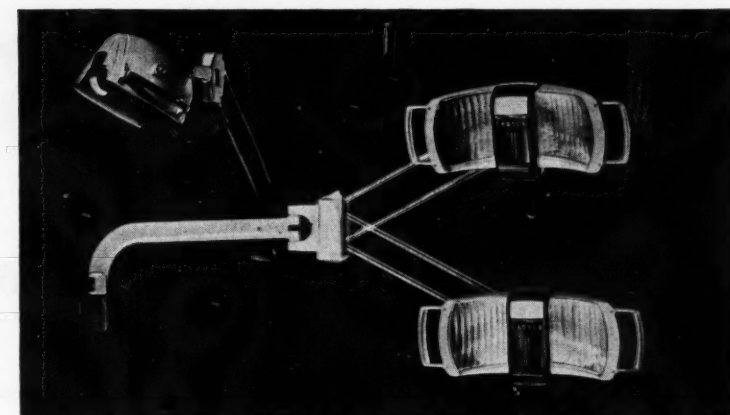
"The decision whether obesity is due to an endocrine disturbance or to overeating is not in fact as important as it seems at first sight. With the exception of myxoedema all forms of obesity have to be treated by restriction of food and sometimes of salt and fluid intake. Glandular preparations administered by mouth

or parenterally have, with the exception of thyroid, no effect on body weight. Thus the influence of castration in either sex, and of adrenal, pituitary, or hypothalamic disease, is not mitigated by extracts of these organs at present available. It is not implied that diagnosis is not important, but merely that in relation to obesity it helps us no further.

"In general it is safe to assert that if fat is increasing the body is receiving more food than it needs. Frank gluttony is not common nowadays, and as in any case the glutton will refuse our advice it would be pointless to waste time on him. Far and away the commonest age for obesity is from forty years on.

"What are the factors which lead to a disturbance of equilibrium between intake and output? They are: (1) Repeated childbirth, no doubt at times responsible for some resetting at a higher level of the central mechanism for maintenance of weight. Often the connection is simply that the woman is more and more tied to the house by her children. She devotes herself to feeding them, and is only too apt to join them at their large carbohydrate 'teas' and then to keep her husband company at dinner. (2) Increasing security and more money to spend on large meals. (3) For the same reason, adding many calories to the daily food intake by consuming strong alcoholic drinks. (4) Increasing distaste for exercise. (5) Business luncheons, often vast and alcoholic."

Turning to an esteemed American publication, *Science*, we find a flesh-promoting and caries-producing party attended by some of our leading biologists. During the last meeting of the American Association for the Advancement of Science at Cleveland twenty-five hundred of the learned biologists present attended a smoker and here, according to *Science*, is what they consumed: "Cigarettes, presented with the compliments of Philip Morris & Co., Ltd., Inc., and refreshments were all available in ample quantities. Carling's Ale and Cocoa Cola were generously donated by the Brewing Corporation



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Electrical design of the PANOVISION is approved by Underwriters' Laboratories. All parts have stood the test of 200,000 extreme arm movements without wear. The PANOVISION gives long years of perfect service.

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Health:

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In a publication of the New York
(Continued on page 240)

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